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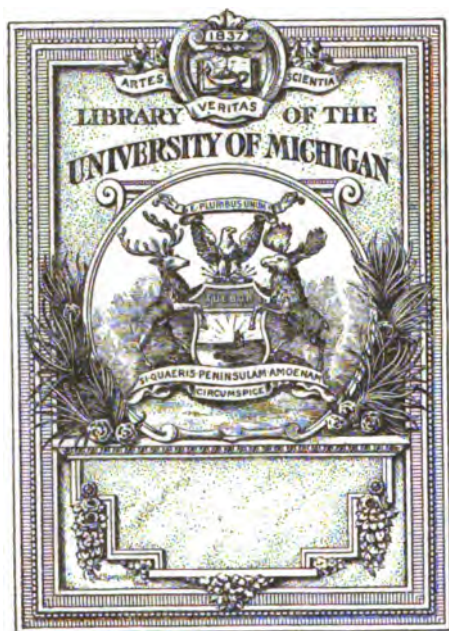
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THE
AMERICAN
JOURNAL OF OBSTETRICS

AND

DISEASES OF WOMEN AND CHILDREN

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VOLUME L.

JULY-DECEMBER, 1904

NEW YORK
WILLIAM WOOD & COMPANY

1904

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THE AMERICAN
JOURNAL OF OBSTETRICS
AND
DISEASES OF WOMEN AND CHILDREN.

VOL. L.

JULY, 1904.

No. 1.

ORIGINAL COMMUNICATIONS.

**THE RELATION OF THE APPENDIX TO PELVIC DISEASE,
BASED UPON A CLINICAL AND MICROSCOPIC
STUDY OF 200 CASES.**

BY

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COMBINED operations may be said to be the order of the day. Not only is the gynecologist called upon to operate upon more than one portion of the generative tract at one sitting, but he is also expected to ascertain the condition of various other abdominal organs when the abdomen is opened for the treatment of pelvic disease. How much shall be done outside of the pelvic cavity during one operation will depend largely upon the number and kind of lesions present and the general condition of the patient. When there is a history of attacks of abdominal and pelvic pain, and exploration through the suprapubic incision has shown the gall bladder filled with stones, obviously cholecystotomy and removal of the stones are called for at the same operation unless the general condition of the patient is a contraindication to the prolongation of the operation. In this manner will the patient be saved the discomfort and expense of a second operation.

The same line of reasoning may be applied to the appendix. Unless there be contraindications, everyone, I think, will agree that this organ, if diseased, should be removed whenever the abdomen is opened for other abdominal and pelvic disease. The

question then turns upon the ability of the surgeon to determine by inspection and palpation if a given appendix be diseased. If the organ be enlarged, attached to diseased appendages or show other gross evidences of departure from normal, there arises no question as to the desirability of its removal. But is the appendix which is free from adhesions, which is not constricted or angulated to be considered a normal organ? Are the appendices which are free from adhesions, but are constricted at one or more places, diseased? In other words, can we, from macroscopic appearances alone, say whether an appendix is or is not diseased? Obviously, this can only be determined by carefully noting the gross appearances of the organ in a series of cases where the abdomen has been opened for other purposes, subjecting these appendices to careful microscopic examination and then combining microscopic with the clinical findings. If appendices presenting certain appearances be found in the majority of cases to be normal, while the contrary is proved to be the case in other appendices, the surgeon would soon have in his possession certain facts from which could be deduced rules which would govern his procedure at a given operation. Certain appendices he would remove because both macroscopically and microscopically he has found them to be diseased. On the other hand, if appendices, to all appearances normal at the operation, were shown microscopically to be diseased and vice versa, the operator would be obliged to dispense with rules, and in case of a certain proportion of the appendices being proved by the microscope to be abnormal, he would be forced either to close the abdomen with the knowledge that he was leaving behind a certain percentage of diseased appendices, or he would be driven to remove every appendix irrespective of its physical appearance. Especially would he choose the latter course if his clinical experience had convinced him that often his patients suffered from a diseased appendix after the surgical cure of their pelvic lesions.

In 1893 my attention was called to the importance of a careful examination of the appendix when the abdomen was opened for pelvic disease. In that year I operated upon a single woman, of thirty-two years of age, who for two years had suffered from dysmenorrhea and pelvic pain. The appendages were not enlarged but were extremely tender and, as there were no evidences of endometrial disease, they were supposed to be the cause of the pain. Section, however, showed the pelvic organs normal. The appendix was found unusually long and club-shaped. Its removal

resulted in a cessation of the attacks of pain and a complete recovery.

Since this case, I have made it a rule to examine the appendix whenever I was not completely satisfied that the patient's symptoms could be explained by the existing pelvic lesions. Like many another operator, however, I failed to record accurately my observations until some two years ago. Then with the view of throwing some light upon the question considered above I began systematically to remove the appendix in every case where the abdomen was opened for other purposes, unless, in my opinion, the patient's chances of recovery were jeopardized by the additional five minutes' time required for the removal. Each appendix thus removed was subjected to careful microscopic examination by Dr. R. L. Morse, pathologist of the gynecologic service of the Hospital of the University of Michigan. His work in turn was supervised by and his results verified in each case by Professor A. S. Warthin, director of the Pathologic Laboratories of the University of Michigan.

In June, 1902, I presented before the Michigan State Medical Society¹⁴ a preliminary report of the microscopic findings in 34 removed appendices, together with certain clinical data relating to these same cases. At that time I purposely refrained from drawing any extensive conclusions, as I wished to study still further this important subject. Since that report I have removed and studied the appendix in 166 additional cases. I have deemed it wise to consider these cases together, since the second classification differs materially from the one adopted in the preliminary report. I have included thirty of my private cases in this list, as the same care was used in the examination of these appendices as with the University Hospital cases.

Certain statements made in the first report apply equally well to this one, viz., "the clinical material at the disposal of the department was as purely gynecologic as it could be made prior to the opening of the abdomen. Whenever it was suspected that the primary focus was situated in the appendix, the case was referred to the surgical clinic. Hence, to the gynecologist, the cases are of more value in showing the relationship between appendiceal and pelvic disease than if the doubtful cases had been included."

It has been the aim to conduct these investigations with a perfectly unbiased mind. No attempt has been made to prove any particular proposition by means of statistics. During the course of the study it became evident that a microscopic classification,

admirable no doubt from a pathologic standpoint, was not at all serviceable in combination with clinical data. The classification finally adopted apparently meets all needs. With this microscopic classification clearly in mind and with the clinical data in addition, it is hoped that the conclusions arrived at will be of real value to the surgeon.

According to the microscopic findings, the 200 appendices may be divided into :

1. *Negative*.—Comprising those cases showing no changes in the mucosa, submucosa, muscularis or subserosa, or upon the peritoneum, when compared with appendices taken as the normal standard and obtained from individuals without history of appendicitis and presenting none of the characteristics described below.

2. *Chronic Inflammation*.—Comprising those appendices presenting evidences of active catarrhal inflammation or ulceration of the mucosa with atrophy of the mucosa and lymphadenoid tissue or muscularis associated with fibroblastic proliferation or formation of scar tissue.

3. *Doubtful Significance*.—Including appendices characterized by hyperplasia of the lymphadenoid tissue, dilatation or constriction of the lumen, hyperplasia of the connective tissue in the submucosa, local or general atrophy of the muscular coat, unattended by conclusive evidences of inflammation, the significance of these changes being unknown.

4. *Former Inflammation*.—Comprising those cases showing partial or complete obliteration of the lumen, formation of scar tissue in the mucosa and submucosa, lymphadenoid tissue and muscularis without active signs of inflammation.

5. *Acute Inflammation*.—Including those cases showing active catarrhal or ulcerative inflammation without fibroblastic proliferation or formation of scar tissue, or atrophy of the different layers of the wall of the appendix.

6. *Peri-appendiceal Inflammation*.—Including those cases showing a purulent inflammation of the subserosa, mesoappendix or muscularis with the mucosa unchanged or secondarily involved.

Microscopically the 200 cases can be arranged in the six groups as follows :

1. Negative, 65 cases, 32.5 per cent.
2. Chronic inflammation, 57 cases, 28.5 per cent.
3. Doubtful significance, 41 cases, 20.5 per cent.

4. Former inflammation, 28 cases, 14.0 per cent.
 5. Acute inflammation, 6 cases, 3.0 per cent.
 6. Peri-appendiceal inflammation, 3 cases, 1.5 per cent.
- Total, 200 cases, 100.0 per cent.

It may be well to state in this connection that Dr. Warthin has ever had in mind in his examination of each appendix the main object of the investigation and, whenever there has been a doubt regarding the abnormality of the specimen, it has been placed in a class by itself. This is of importance for it does away with the criticism that a pathologist can always find something wrong with a specimen. Combining cases of "doubtful significance" (41) with the negative or normal cases (65), we have 106 cases, or 53 per cent. showing practically no evidence of disease, while 94, or 47 per cent. of the appendices removed during the course of the sections for other purposes were diseased. As would be expected, the kind and extent of the disease varied in the different specimens from acute inflammation to where the disease had ceased to be active and was recognizable only by scar tissue, the result of former inflammation.

These figures are definite and conclusive as regards the condition of the appendix as shown by the microscope in 200 appendices removed incidentally in the course of as many operations for various pelvic lesions. The operator is not obliged to state his impressions of how often in sections of this kind the appendix will be found diseased. Such "impressions," although stated positively in medical society discussions, carry but little conviction with them, no matter how accurate may be the observer. For, as we shall show later, it is impossible for anyone to judge of the abnormalities of the appendix by its macroscopic appearances.

There are only three cases showing peri-appendiceal inflammation alone. There were, however, 12 additional cases, which were secondarily peri-appendiceal, although their chief characteristics placed them in other groups.

In the chronic inflammatory class there were eight cases or 14 per cent., which could be designated as ulcerative. In 29, or 50.87 per cent., there was an obliteration of the lumen of the appendix. This obliteration varied in position and degree. At times it was at the tip, at other times at some other portion of the tube.

In the peri-appendiceal class there were two cases of tuberculosis and one of primary carcinoma of the appendix. The latter rare condition will be considered later.

Clinically the 200 cases have been tabulated under different headings, according to age, social state, dysmenorrhea, abdominal pain which might have been due to a diseased appendix, and according to the disease for which the primary operation was performed. In addition, the observations made at the time of operation regarding the shape, length and condition of the appendix as regards adhesions have been carefully collected and tabulated in reference to the microscopic findings. It is not always possible, either in hospital or private practice to secure histories of value for statistic purposes, but at least the attempt has been made in the 200 cases.

Social State.—This can have but slight bearing upon the relation of the appendix to pelvic disease, except as it shows the nature of the clinical material from which the statistics have been made. Of the 200 patients, 157 were married, 31 were single and 12 were widows.

Age of Patients and Length of Appendix.—Ribbert¹⁶ has noted the length of the appendix in 400 postmortem cases during the decades of life from ten to sixty years. He finds that the appendix reaches its maximum length between the tenth and thirtieth years. It gradually becomes smaller during the decades between thirty and sixty years.

Ribbert's Tables.	Author's Tables.
Length in 400 Cases.	Length in 107 Cases.
10—20 years, 9.75 cm.	
20—30 years, 9.5 cm.	20—30 years, 10.5 cm.
30—40 years, 8.75 cm.	30—40 years, 8.1 cm.
40—60 years, 8.5 cm.	40—60 years, 9. cm.

The length of the appendix was carefully determined in 107 cases at the time of the operation. The method adopted was to ascertain the exact length by means of an aseptic graduated aluminum rule after the mesentery had been tied and cut. It was found impossible to record the exact length by any other method when the appendix was curved or bent upon itself. Shrinkage of the appendix after its removal renders laboratory measurements far from accurate, especially if the stump method of removal has been employed.

The average length of the appendix in 107 cases was 8.5 centimeters. This agrees very nearly with the measurements of other observers. In Ribbert's 400 cases the average length was 8.25 centimeters. The longest appendix was 20 centimeters, the shortest 3.75 centimeters. Recently, however, I discovered in the rou-

tine examination of the appendix in a non-inflammatory case, an appendix measuring only 1 centimeter in length. There were no adhesions around this diminutive organ or any evidence that it had been amputated. Arranging the 107 patients into decades according to ages and comparing the average lengths of the appendices during these various decades, we see that the maximum length is reached up to the age of thirty, 10.5 centimeters. This agrees with Ribbert's findings. There is a decrease in length in the next decade, to be followed by an increase in the last two decades, contrary to Ribbert's statistics, where the average length decreases during each decade.

Arranging those with diseased appendices according to decades and comparing these with the corresponding decades of those whose appendices were normal, we see that the length of the appendix in the normal group decreases as the age of the patients increase, while in the inflammatory cases the change in the length corresponds to that recorded above; viz., a maximum length between twenty and thirty years, a decrease in the next, and an increase in the next two decades.

It is possible, nay, even probable, that inflammatory changes play an important rôle in determining the length of the appendix. It may be inflammation in some cases (nearly 50 per cent.), rather than atrophic changes due to old age which causes a decrease in length as the age increases.

Length of appendix in 107 cases arranged according to groups and decades :

Normal Cases (60).	Inflammatory Cases (47).
Length.	Length.
20—30 years, 10.3 cm.	20—30 years, 9.4 cm.
30—40 years, 9.3 cm.	30—40 years, 6.8 cm.
40—60 years, 9.1 cm.	40—60 years, 9. cm.

Dysmenorrhea.—McLaren¹² has called attention to the unsatisfactory results sometimes following ordinary surgical treatment for supposed cases of obstructive dysmenorrhea and suggests that some of these cases may be explained by the presence of an inflamed appendix, which manifests itself by attacks of colic during the menstrual period. He cites a number of illustrative cases. Other gynecologists have advanced the same idea. Recently Guinard⁸ has called attention to attacks of pain in the female, which he designates as appendicalgia. Pain is the most prominent symptom while the actual change in the appendix may be very slight. In the opinion of this writer also, in many cases of so-called dys-

menorrhœa, the fault may not lie in the uterus or appendages but in the appendix. My own experience and reasoning lead me to the same conclusion, so much so that I continually bear this cause in mind in the consideration of the etiology of dysmenorrhœa, especially in young single women whose pelvic organs seem fairly normal. As having a possible bearing on this question, I have noted the presence or absence of pain at the menstrual period in all of the 200 cases. Of course the word dysmenorrhœa is a relative one and must be defined nearly every time it is used. Where there was but slight pain, unaccompanied by clots, I have classed it as absent. It must be remembered also, that in nearly all of the 200 cases the abdomen was opened for marked pelvic disease, which in itself accounted for most of the painful periods. We find, however, that when the appendix is the seat of chronic inflammation, the proportion of cases having painful menstruation is greater than in those cases where the appendix was found normal. In the former group, the percentage was 41.8, and in the latter 36.9.

This brief consideration of a diseased appendix as a causative factor in the production of dysmenorrhœa is unsatisfactory. So many factors may be present, any one of which may be responsible for a large part of the dysmenorrhœa in a given case, that the question must be, by its very nature, hard to solve. But that an appendix, the seat of chronic inflammation, can manifest itself at the menstrual period by a sharp attack of abdominal pain, I am thoroughly convinced.

History of Appendicitis.—It must be remembered that the cases under consideration were strictly gynecologic cases. The chief disease demanding operative treatment was supposed to originate, in every case, in the pelvis. The decision was arrived at after a careful consideration of the history and the pelvic findings. While in quite a proportion of the cases the involvement of the appendix was suspected, it was judged to be secondary to and of less importance than the pelvic lesions. We know now, what was not the case in the first consideration of appendicitis, that nearly as many women are attacked by the disease as men. Einhorn⁷ shows that of 18,000 autopsies performed at the Pathologic Institute at Munich from 1854, in .55 per cent. there was perforative appendicitis in males, while the percentage in females was .57 per cent. Again, Krüger¹¹ states that in Sonnenburg's clinic, in the seven years previous to 1897, out of 209 cases of appendicitis, 127, or 59 per cent. were men, while 41 per cent. were women. Or,

take such a clinic as Ochsner's¹³ at the Augustana Hospital, of 90 patients suffering primarily from appendicitis, 39 were males and 51 were females. This may be from the peculiar nature of the clinic, but it is significant as showing the proportion of males attacked by this disease is not so greatly, if any, in excess of the females. The gynecologic service at the University Hospital is made up of material rich in new growths and chronic pelvic inflammatory lesions. Acute inflammatory cases do not predominate as is the case where the material is supplied from the poorer districts of a large metropolis. Hence, in one way, diagnosis is easier than when called upon to differentiate between appendicitis and pelvic exudates. To quote Ochsner again, besides the 90 cases treated in one year at his clinic, there were 13 cases in which the primary disease was in the adnexa or both appendix and tubes were so extensively implicated that it was impossible to determine the primary seat of the inflammation.

An analysis of the 200 cases in reference to the history of possible appendiceal pain shows that such pain was present in 45 per cent. of the cases where the microscope showed the appendix was or had been diseased. Such pain was present in only 33 per cent. of patients whose appendices were subsequently shown to be normal. Of course, this is reasoning backwards and is of value only as showing that a more careful consideration of the location, periodicity and kind of pain in pelvic disease may give us a clue to coexisting involvement of the appendix. As before stated, patients giving a distinct history of appendicitis would have been referred to the surgical service. These figures simply mean that in 45 per cent. of the cases, the pain, by its location and other characteristics, was such as might have led to a suspicion of possible coexisting appendicitis, if it were possible to differentiate between pelvic pain and that originating from a subacute or chronic appendicitis.

Appendiceal Adhesions.—It is much easier to determine whether the appendix be free or buried in adhesions than it is to decide some of the questions just under consideration. Accurate observations were made as to adhesions in 146 of the 200 cases. The appendix was adherent 27 times, or in 18.5 per cent. Adhesions were twice as frequent in those cases where examination showed past or present disease as in those cases where the appendices were found normal. It is worthy of note, however, that in 6.1 per cent. of the normal cases adhesions were present.

Shape of the Appendix.—The shape of the appendix was noted

as being abnormal in 52 out of the 200 cases, or 26 per cent. These abnormalities have been arranged in a table according to the divisions already referred to.

TABLE SHOWING ABNORMALITIES IN SHAPE OF APPENDIX IN 52 CASES:

Class.	Total No. of Cases.	Club-shaped.	%	Constricted.	%	Bent on Itself.	%
1. Negative.....	65	7	10.7	6	9.2	6	9.2
2. Chronic Inflammation....	57	2	3.43	7	12.3	9	15.8
3. Doubtful Significance....	41	6	14.6	1	2.3	3	7.3
4. Former Inflammation....	28	1	3.5	3	10.7	4	14.3

Cases of acute periappendiceal inflammation were omitted because the small number interfered with the averages. A study of this table reveals a number of significant facts. In the first place, it clearly demonstrates that mere shape of the appendix cannot serve as an index of its normality or disease. Out of the 52 cases the appendix was noted as abnormal in shape 27 times, where the microscopic findings showed no disease. The appendix was noted as being club-shaped in 13 cases, yet subsequent investigation showed no disease. In 25 cases, however, where the shape of the appendix was noted as abnormal, different degrees of inflammation were found on microscopic examination.

Such findings as these must at least throw some doubt upon the correctness of the assertions of those who claim to be able to tell whether the appendix be diseased by its mere shape.

Fecal Concretions.—Fecal concretions were noted 12 times out of 146 observations, or 8 per cent. This does not include fecal concretions as revealed by the microscope. Such concretions are of microscopic interest only and are of no value clinically. The 12 concretions referred to were palpable and could be taken into account in deciding whether to leave or remove the appendix. No other foreign bodies were found in this series of cases. Ribbert found 10 per cent. of fecal concretions in his 400 cases. They were slightly more common in men than in women, 10.5 being noted in the former and 9 per cent. in the latter. Kelly¹⁰ reports Robert Abbe as being of the opinion that the perfectly normal appendix never contains fecal concretions. This statement is not borne out by the results of microscopic examination of the cases referred to. Out of the 12 cases showing fecal concretions, four

showed inflammatory changes, while eight were normal. This shows conclusively that the presence or absence of fecal concretions cannot be taken as a criterion of a diseased appendix. The removal of an appendix containing one or more concretions on the ground that their presence is a source of danger and renders the appendix more liable to disease is, on the other hand, logical and seems to be supported by abundant clinical evidence.

Pelvic Pathology and the Condition of the Appendix.—The 200 cases which have been used as the basis for this investigation were not selected ones. They represent the ordinary cases which the gynecologist is called upon to treat, with the possible exception of being more purely gynecologic on account of the rules under which the patients were assigned to the two services.

While the various lesions for which the 200 laparotomies were performed have all been carefully tabulated, only illustrative groups in their relations to the gross and microscopic condition of the appendix will be considered.

Chronic Disease of the Appendages.—In this group have been placed all cases where the appendages were the subject of chronic inflammation. It includes degenerative changes in the tubes and ovaries, as well as active inflammatory processes. In some there were slight, in others dense adhesions binding down the appendages and uterus to the pelvic floor or coils of intestines. Other cases, however, were free from adhesions, the operations being performed for degenerative changes in the ovaries with or without retrodisplacement of the uterus.

Of the 106 cases of chronic disease of the appendages, 62 or 58.4 per cent. were accompanied by normal appendices, while 44 or 41.5 per cent. showed past or present changes in the organ. As regards the side affected it may be noted that the disease was confined to the right side of the pelvis in 8 cases, to the left side in 6 cases, while both sides were affected in 30 cases.

The frequency with which the appendix is diseased in inflammatory pelvic affections of the right side has been dwelt upon by numerous observers. MacLaren's¹² experience is notable. He had 58 cases of inflammatory disease of the appendages out of 200 laparotomies. In 20 of these cases the appendix showed enough evidence of disease to require its removal. The appendix may be infected from its contiguity to the appendages, usually the right, at times the left. Infection may travel to the appendix from the appendages or vice versa by way of the appendiculo-ovarian liga-

ment, a peritoneal fold joining the right ovary to the appendix, as was first pointed out by Clado, and since verified by numerous observers.

Contiguity.—It is not uncommon to meet with the normal or abnormal appendix situated within the pelvis. It may or may not be adherent to the appendages of the right or left side, according to the inflammatory conditions present. While the appendix is more liable to come in contact with the appendages of the right side, it is perfectly possible, as I have demonstrated many times, in the presence of enteroptosis, or with a very movable cecum, for the appendix to rest upon the left tube or ovary. The appendix lies within the pelvis in a considerable proportion of cases. I have recorded it as within the pelvis in many of the cases where changes were found in the appendix. I am now noting its exact location whether adherent or not, and it is surprising the number of times it lies within the pelvis. Poncet and Dormoy,¹⁵ in order to suggest a rational treatment of certain forms of appendicitis through the rectum or vagina, have adopted pelvic as a distinct classification. Kelly¹⁰ makes it a rule to remove long, free appendices in all right-sided pelvic operations. It would seem more logical to remove such appendices, no matter what part of the pelvis has been operated upon, since such free appendices can become adherent to any part of the pelvis.

Interesting in this connection are the gross appearances of the appendix noted at the time of the operation. These have been arranged in the form of a table and are of value in the way of comparison. It will be noted that in the inflammatory group (44 cases), there were 18 cases, or 40.9 per cent. of adhesions. While in the negative group there were only 11 adherent appendices, or 17.7 per cent. In the same way the inflammatory group showed 14 cases, or 31.8 per cent. of constrictions, while there were only 11 per cent. of constrictions in the negative group. On the other hand, there were more club-shaped appendices and fecal concretions in the negative than in the inflammatory group. This proves that even in chronic disease of the adnexa, where the appendix is more liable to be diseased, the mere gross appearance of the organ is no safe guide for its removal. Adhesions of the appendix to adjacent organs, even to the appendages, constrictions of its lumen, fecal concretions and a marked relative increase in the size of its distal end does not necessarily denote that the appendix is diseased.

TABLE SHOWING CONDITIONS OF APPENDIX IN 106 CASES OF CHRONIC DISEASE OF THE APPENDAGES:

	Total No.	%	Adhesions, No.	%	Club-shaped, No.	%	Constrictions, No.	%	Fecal Concretions, No.	%
Negative group.....	62	58.4	11	17.7	5	8.1	7	11	6	9.6
Inflammatory group.....	44	41.5	18	40.9	2	4.5	14	31.8	3	6.8

In one of my cases the appendix was removed unwittingly. A right-sided ectopic gestation sac was removed through a posterior vaginal incision. A careful examination of the specimen at the laboratory showed that the adherent and diseased appendix also had been removed. A moment's consideration will convince one that such an appendectomy must be of the crudest kind, and is an argument against the pelvic route for the treatment of pelvic lesions. Had the abdominal route been employed, not only could the ectopic sac have been more easily dealt with, but the diseased appendix would have been discovered and removed in a surgical manner.

Uterine Fibromata.—There were in all 26 of these growths, arranged in two groups according to the presence or absence of adhesions. There were 19 in the non-adherent class, while in 7 cases there were adhesions either of the appendages or some other portion of the growths. Nine of the patients with non-adherent tumors had normal appendices, while the remaining 10 showed inflammatory changes. Of the 7 patients with adherent fibromata, 4 had normal appendices, while in 3 inflammatory changes were present.

Of the entire number of patients with fibromata, 13, or 50 per cent. had normal appendices. Abnormalities in the gross appearance were noted in 4 cases, fecal concretions, adhesions, a constriction, and club-shaped being recorded in 1 case each. Of the 13 inflammatory appendices, 2 were adherent and 3 constricted. Hence, as far as the gross appearances were concerned, the appendices *appeared* diseased in only one less case in the negative than in the inflammatory group.

Ovarian Cystomata.—The two hundred cases included 24 ovarian cysts, varying in size from growths whose upper limits reached midway from the pubes to the umbilicus to very large tumors, reaching to the ensiform. In 17, or 70.9 per cent. of

these cases, the accompanying appendices showed inflammatory changes, while in 7, or 29.1 per cent., the appendices were normal. Thus the proportion of cases with diseased appendices is much larger than with fibroids. In 9 of the 17 cases abnormalities of the appendix were noted at the time of the operation—1 was club-shaped, 2 had fecal concretions, 2 were constricted, while 3 were adherent to the cyst wall. Of the 7 negative appendices, 1 was bent upon itself and 2 were club-shaped. Thus, again it can be seen that the mere gross appearance of the appendix is no criterion of the microscopic picture.

Various observers have called attention to the frequency with which the appendix may be attached to the wall of an ovarian cyst. Sutton¹⁷ mentions this frequency and claims that the adhesions often arise from inflammation of the appendix. He quotes Doran as having had 6 such cases. Such an adherent appendix may easily set up an inflammation of the cyst wall, and the infection even extend to the cyst contents, giving rise to a suppurating ovarian cyst. Chogron,² writing of the adhesions of the appendix to adjacent organs, collected from the literature 20 cases where it was adherent to ovarian cysts. My own statistics (3 out of 24 cases) would show it even more common. Its position in relation to the cyst wall is important. Not only can appendicitis result, but the cyst itself can be infected from the inflamed appendix.

TECHNIC OF APPENDECTOMY AS A CONCOMITANT TO OTHER PELVIC OPERATIONS.

Except in the case of the appendix accidentally removed through a vaginal incision for ectopic gestation, the appendices were all removed through the median abdominal incision. This is always made long enough to admit the operator's hand. So important do I consider the thorough exploration of the abdominal cavity when once the peritoneum is incised, that I have dispensed with the small median incision. If the pelvic disease be severe enough to necessitate a laparotomy, a thorough exploration of the abdominal cavity is also called for unless there be contraindications. Pus in the pelvis would contraindicate the passing of the hand upward to the diaphragm for fear of septic contamination. It would not, however, prevent an examination of the appendix. On the other hand, the general condition of the patient may be such as to preclude any treatment except that directed towards the pelvic lesion. The appendix, with rare exceptions, due to an extremely short mesocecum or to adhesions, can be drawn to the

median line with ease. The white band of the cecum serves as the best guide for the location of the latter. The hand is swept under the abdominal wall into the iliocecal fossa until the forefinger locates the band. The latter is then drawn into the incision and traced until the appendix is located. The appendix and cecum are then surrounded with gauze sponges to guard against possible fecal contamination, and the appendix removed, the stump being touched with pure carbolic acid and buried by a purse-string peritoneal suture.

The mortality attending the removal of appendices, the seat of chronic, not acute, inflammation should be nil. As far as could be ascertained in no one of the 200 cases was the mortality or even morbidity increased by the appendectomy.

Two years ago Howard Kelly⁹ secured, through correspondence with 74 prominent surgeons in this country, their opinions as to the advisability of removing the apparently normal appendix when the abdomen was opened for other purposes. Their replies showed that a large majority were against the removal of the normal appendix simply because the opportunity arises to do so. An overwhelming majority, however, were in favor of the removal of the appendix when it deviates in the slightest degree from normal. This last opinion was brought out by the question, whether the slightest adherent appendix, when the abdomen is opened for other purposes, should be removed. If the study detailed above has proved any one thing conclusively it is that adhesions of the appendix *do not* necessarily mean departure from the normal; viz., a diseased appendix as revealed by microscopic examination. While adhesions were twice as frequent in those cases where the appendices showed past or present inflammation in 6.1 per cent. of the normal appendices adhesions were recorded as being present. The same may be said of club-shaped and constricted appendices and those containing fecal concretions. In other words the surgeon cannot tell in the class of work under discussion by gross appearances alone, whether the appendix be or be not diseased. The surgeons quoted above would and do remove those appendices which they consider abnormal. They confess that the patient is much better off without the appendix if there be the slightest question of its being diseased. The reason they do not remove every appendix, when the abdomen is opened for other purposes, is because they feel that by inspection and palpation they can identify such a diseased appendix. I was of

the same opinion before I began the above series of investigations. Now I am willing to confess to my inability to so determine.

I am convinced that in the past many of the failures to cure my patients, after subjecting them to various surgical procedures via the suprapubic incision, has been through neglect in not examining and removing the appendix. Appendiceal disease need not find expression in every case in an acute attack. The chronic form of appendicitis with its rather frequent exacerbations gives rise to pain, tenderness, or at least to an uncomfortable feeling in the right lower abdomen. I believe in many cases after complete ablation of the uterus and appendages for purulent diseases, the subsequent abdominal pain and tenderness are not so commonly dependent upon adhesions as has been supposed. Rather, in many cases it is due to the presence of a diseased appendix. I know that my symptomatic cures have increased since I began systematically to remove the appendix when the abdomen was opened for other purposes. This alone is enough to warrant my continuation of the practice.

As I stated at the outset of this paper, there may be contraindications to the removal of the appendix. However firmly the surgeon may believe it his duty to remove every appendix, he would not prolong the operation for five minutes if thereby he would seriously jeopardize his patient's chance of recovery. Neither would he remove the uterus in a case of bilateral pus tubes, nor resect an ovary after removal of one pus tube, nor correct a retro-displaced uterus in addition to other pelvic procedures, if thereby he thought he was diminishing his patient's chances of life. Yet rarely in his routine work does he have to decide against such additional procedures. I cannot see the force of the time argument against the removal of the appendix as applied to the large majority of cases. In my opinion, as before stated, the removal of the appendix as a concomitant operation when opening the abdomen for other purposes, should not and does not in the hands of the trained surgeon add to the mortality of the abdominal section. Nor do I believe it prolongs the convalescence. These last two statements are individual opinions and possibly are of value merely as applied to my own work. But if they be universally true, the only reason for the non-removal of every appendix, where no contraindications exist, is eliminated and the operator is logically compelled to remove the organ in every case. Otherwise, in nearly 50 per cent. of cases he will be leaving behind a

diseased appendix. His operations will be incomplete and his patients will suffer correspondingly.

Another argument in favor of removal of the appendix as a concomitant to pelvic operations by the abdominal route is the occasional presence of malignant disease of the appendix. The cases of primary carcinoma of the appendix are multiplying since the latter has been more systematically subjected to microscopic examination. Clark⁴ has reported recently a case of primary carcinoma of the appendix in a series of 120 laparotomies for pelvic disease with coincident removal of the appendix. One year later there had been no return of the disease.

A. O. J. Kelly,⁹ in 1900, reported three cases of primary carcinoma of the appendix in an examination of 706 appendices removed by Deaver. There was a fourth case but it may have been secondary to a carcinoma elsewhere in the body. In the three undoubted cases the tumors were of microscopic size and were not detected by the ordinary microscopic examination. In my case also the true nature of the disease was not discovered until the systematic laboratory examination had been made. Although removed nearly a year ago there has been no sign of a recurrence. Here are five cases of primary carcinoma of the appendix in 1,026 appendectomies, all unrecognized macroscopically. All the appendices were removed so early that the chances of non-recurrences are very good.

Purposely I have passed over with few comments that portion of our subject which I believe has been settled beyond doubt. Deaver, Ochsner, Kelly, and the testimony of other equally good surgeons have proved that the appendix often becomes diseased through its close proximity to diseased appendages and vice versa. Baldy¹ is of a different opinion, but his statements lack proof. Microscopic sections in quite a few of the 200 cases in my series showed progressive involvement of the different layers of the wall of the appendix, beginning with the serosa and working inward. As far as the surgeon is concerned, it is immaterial whether this is exactly the same kind of inflammation as that where the morbid process starts with the mucosa. Suffice it for him to know that the appendix is diseased and may give rise to symptoms in a certain proportion of cases.

CONCLUSIONS.

1. Only a little over 50 per cent. of appendices removed during the course of operations for pelvic lesions will be found microscopically to be normal.

2. The remainder will show forms of acute and chronic inflammation or the result of former inflammation.

3. The average length of the appendix is between 8 and 9 centimeters. In 107 cases of the present series the average length was 8.25 centimeters.

4. The maximum length of the appendix is found between the ages of twenty and thirty years. After this period the average length of the appendix is less. While this diminution probably is in part due to normal atrophy, in a certain proportion of cases it is influenced by inflammatory changes.

5. Menstrual pain may be due to or enhanced by the presence of an inflamed appendix. The congestion incident to menstruation increases the inflammation and gives rise to attacks of appendiceal colic.

6. It is exceedingly difficult to differentiate between pain due to pelvic lesions and pain due to chronic appendicitis. In the present series of cases a much larger proportion of patients whose appendices were abnormal gave histories of having or having had this pain of doubtful origin.

7. The appendix is adherent twice as frequently in those cases where microscopic examination shows past or present disease. A certain proportion of adherent appendices are, however, perfectly normal microscopically.

8. Mere shape of the appendix cannot serve as an index of its normality or disease. Appendices may be club-shaped, constricted or bent upon themselves and yet be perfectly normal microscopically.

9. The appendix is the seat of fecal concretions in at least 8 per cent. of all cases. Their existence does not denote that the appendix is diseased.

10. Nearly 50 per cent. of patients with chronic disease of the appendages show accompanying disease of the appendix.

11. This inflammation may be the result of the direct contact of the appendix with diseased adnexa or infection may travel from the latter to the appendix through the lymphatics connecting the two.

12. In chronic disease of the appendages adhesions of the accompanying appendices are present in nearly 50 per cent. of the cases, where microscopic examination shows the latter to be diseased. In a certain proportion of cases, however, although the appendix may be adherent, it is perfectly normal.

13. In chronic disease of the appendages the appendix which

is club-shaped, constricted or contains fecal concretions, is not necessarily diseased.

14. In 50 per cent. of patients with uterine fibromata there is accompanying disease of the appendix.

15. In 70.9 per cent. of patients with ovarian cystomata the accompanying appendices are diseased. The appendix is not infrequently adherent to an ovarian cyst and may even infect the latter.

16. The ordinary median abdominal incision in the class of cases under consideration amply suffices for the removal of the appendix.

17. Such removal should neither increase the mortality nor prolong the convalescence.

18. Since it is impossible for the surgeon, by gross appearances alone, to determine which appendix is diseased, and since nearly 50 per cent. of appendices where the abdomen is opened for other purposes are found diseased, it is the surgeon's duty in the absence of contraindications to remove the appendix in every such case. Otherwise he will leave behind diseased appendices, which may prove a subsequent source of suffering to the patient.

19. Systematic examination of series of removed appendices show the occasional presence of primary carcinoma in such an early stage that it could not have been detected by inspection at the time of operation. Removal at this early stage means probably a non-recurrence and the saving of a life. Even were carcinoma of the appendix not commoner than once out of 200 abdominal sections it would still be an argument for the removal of the appendix in every case where the abdomen is opened for other purposes.

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CLAMP AND CAUTERY IN APPENDECTOMY.¹

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It will perhaps be conceded that the most important steps in appendectomy are the abscision of the appendix itself and the disposition of the stump, since unworkmanlike manipulation in cutting off the vermiform appendix may be attended by escape of infectious contents of the appendix and cecum into the peritoneal cavity, the danger of which accident is well known to be imminent. Unskilful treatment of the stump is culpable in many cases of failure to effect a complete cure, being responsible for many unfortunate sequelæ like fecal fistulæ or post-operative septic infiltration of the cecal coats.

Most surgeons, as is well known, simply ligate the meso-appendix and the neck of the vermiform appendix with silk ligatures, cut the appendix away with knife or scissors, and after treating the stump with carbolic acid or other antiseptic agent, invaginate it into the coats of the colon by the purse-string suture after Dawbarn or by Lembert sutures.

Other operators who do not employ this simple method as a routine practice, have recourse to it in certain exceptional cases, for example Dr. Howard Kelly, who observes that "in some cases where there is extensive suppuration of the appendix, or where its peritoneal coat is friable, it may be impossible to obtain a peritoneal envelope for the stump." Where this cannot be effected, he says, "it is better to throw a silk ligature around the entire appendix, tying it tightly and then to cut it off beyond the ligature, sterilizing the end and covering it with the peritoneum by suturing a fold of the colon over it."

Deaver also remarks that when the appendix is gangrenous or friable or is involved in inflammatory lymph, we have to content ourselves with the simple ligature taking in all the coats of the organ.

Another familiar method constantly used by many operators of unquestionable skill and judgment is that which consists in turning down a cuff of peritoneum, pulling up the other coats,

¹By invitation, Chicago Gynecological Society, April 15, 1904.

ligating these at the base, abscising, permitting the musculo-mucous stump to retract and suturing the peritoneal cuff over the stump.

There is a serious objection to both of these methods. The tying of a circular ligature about the base of the appendix either internal or external to the serosa, may be productive of dangerous consequences for the reason that such a ligature having been applied does not permit of exploration of the canal of the stump for the purpose of determining whether the same is patulous.

If a circular ligature be applied beyond a stricture, the operator may thus by his own act establish conditions which are in every way favorable to the development of a fresh attack of active inflammation and suppuration. Surgeons who make a practice of exploring the canal of the stump realize how frequently the lumen of the appendix is constricted at its base by hard stricture-like infiltrations. It will hardly be denied that after abscision of the appendix, the probe should always be passed as McBurney stated early in his work in this field, through the base of the appendix into the colon to determine that natural drainage for the stump will exist. If the canal is not pervious, it may be rendered so by dissection or cauterization before the suture or ligature is applied.

Post-mortem examination (Morris—Lectures on Appendicitis) in certain patients who died after operation at a favorable time, "has shown secondary perforation of the appendix under the ligature. The stump of an appendix should not be tied like an artery and left without further protection. In an artery we have an aseptic fluid in the lumen at the point of ligature, and repair goes on in spite of compression-anemia under the ligature. In the lumen of the stump of the appendix, we have fluid laden with bacteria, which are quick to attack the ring of tissue disabled by compression. In an artery, the opposed surfaces of the tunica intima become adherent; in an appendix, the opposed surfaces of mucosa or lymphoid tissue do not become adherent."

If the base of the appendix be caught between the jaws of a light clamp and the abscision be performed with the Paquelin cautery, the canal of the stump may still readily be explored.

Many surgeons in view of the importance of exploration of the stump canal prefer not to ligate the mucous membrane and do not apply an external circular ligature, but simply cut the appendix across, closing the distal end with a clamp or ligature, and compressing the proximal end with the fingers, then after sounding the short canal, invaginating the stump into the cecum with the

purse-string or Lembert sutures. When this method is used, particularly if the tissues be much thickened or if there exist extensive suppuration or the coats be friable, there is considerable likelihood of escape of the contents of the cecum, or appendix, or both, into the *cavum peritonei* during the operation.

The writer does not wish to dogmatize, but respectfully submits his belief that a light clamp with broad accurately fitting protecting shields, applied to the base of the appendix will effectually preclude the possibility of pus from the cecal wall or appendix contaminating the neighboring serosa or floating into the peritoneal cavity. It is further submitted that very little pus or other fluid contents from the appendix will escape, though the appendix be quite full, if the separation be made with the hot cautery knife between two clamps, and moreover that whatever fluid contents may escape, the same will have been rendered practically sterile by the heat of the cautery, though this heat, it should be understood, need not be intense enough, it being a light instrument, to impart sufficient heat to the underlying shielded clamp that the latter might burn or sear the serosa. The writer has never seared the cecal serosa lying under the clamp by the use of the cautery. However, if the heat be feared, the appendix may be cut off with scissors or knife while the special clamp with its trough-like shields protects the peritoneal cavity from contamination.

McBurney, after cutting away the appendix as usual, holds the edge of the stump with forceps. The permeability of the short canal is then determined by the probe, the fine point of the Paque-lin cautery is next pushed in so as to destroy the mucous membrane nearly to the colon and a fine catgut ligature is applied about the stump within the cauterized area. The button of the stump beyond the ligature is then reduced with scissors, and its surface freshly cauterized. In effect all that is accomplished by this operation may be attained with increased safety and much more quickly by the light clamp and cautery with which, if the clamp be applied close to the cecum, the stump may be reduced to very small proportions or annihilated and the mucosa sterilized.

Dawbarn (Dennis' System of Surgery) passes a purse-string suture of silk through the superficial layers of the cecum one fourth of an inch distant from the base of the appendix. It is first placed but not tied. The appendix is cut off, leaving the stump about half an inch long. The canal of the stump is dilated with fine forceps and the stump is invaginated into the colon. The purse-string suture is now tied, the forceps used for invagination

being withdrawn at the moment of tying. An objection to the purse-string suture consists in the circumstance that when it is used, reliance is placed on a single thread which if it should break or cut out, may permit leakage. It must therefore be reinforced by Lembert sutures; and while the Dawbarn method does away with certain unnecessary manipulation of the stump after abscission, since the purse-string suture is introduced before the appendix is cut off, it involves, if the operation is to be safe, the use of both circular and Lembert sutures. That is to say, it entails more suturing than is necessary if the Lembert sutures or sutures similar to the Lembert sutures be used alone.

Whatever the method employed, the operator seeks, as has been stated by Kelly, to accomplish two things; the prevention of contamination of the surrounding tissues with bacteria or pus from the lumen of the appendix or intestinal contents from the cecum and to prevent injuries to the intestines, large and small. Though for obvious reasons it would be difficult to prove, it seems a fair contention that the removal of the appendix by the application of the cautery between the jaws of the two pairs of light clamps vouchsafes more protection against infection of the peritoneum than simply cutting off with the scissors or knife. When the stump is thick and rigid and much disorganized, invagination may be impracticable, in which case, if it be not too large, annihilation with the cautery with accompanying destruction of bacteria will leave a condition of affairs more favorable to prompt healing than may be produced by depressing the dangerously infected stump into the wall of the colon (instead of into the lumen of the latter) in which case drainage of the septic stump into the colon may fail to occur.

The clamp and cautery method of appendectomy here described is practically that of the late Dr. Joseph Eastman who applied a light clamp to the base of the appendix and removed the organ by cauterization. He invaginated the stump with four or five Lembert sutures placed in position, while the clamp yet held the base of the appendix, and prevented the escape of the infectious contents. The stump was invaginated by the tightening of the ligatures simultaneously with the withdrawal of the forceps.

The writer's modification of this appendix clamp consists in the addition of the removable shields in which the escaping contents of the appendix are caught, and the changing of the grooves in the jaws so that they run not transversely but parallel to the jaws of the forceps. The jaws with longitudinal grooves may

be more readily withdrawn from the appendix under the partly tied Lembert sutures.

The writer applies the forceps close to the cecum, the jaws parallel to the ventral longitudinal muscle band. Light artery forceps are applied above the clamp and the appendix is severed between the jaws of the artery forceps and clamp with the Paquelin cautery. When this special clamp is used, pus, fluid intestinal contents, fecal concretions or other infectious material escaping from the appendix on severing it with the cautery will be caught in the shields which are at the sides of the forceps jaws. The shields may also be appreciated for their value in holding back obtrusive coils of small intestine and portions of omentum out of the range of the heat of the cautery. No matter how accurately gauze pads be arranged about the base of the appendix, they can hardly protect the peritoneum from the heat of the cautery or from contamination with the contents of the appendix as can these shields.

After the separation of the appendix, the shields may be very easily removed. No jerking is required. The slightest traction releases them. After they have been displaced, the base of the appendix is held in a single light clamp. It is now readily possible to introduce the purse-string suture as suggested by Dawbarn or the Lembert sutures, the latter passing over the forceps jaws, the forceps remaining in place and preventing escape of infectious material until the purse-string suture is ready for tightening or the Lembert sutures all in place, are ready for tying, according to the choice of the operator and the shape of the stump, whether it have a round, slender base or lie for a distance in the infiltrated and swollen cecal wall. The purse-string suture, if used, should be drawn tight as the forceps are removed. After the release of the stump by the removal of the forceps, the canal may be explored and the stump invaginated. All of these manipulations may be practised simultaneously.

If simple Lembert sutures are used, these are introduced at one side of the forceps jaws, and, passing over the jaws while they still hold the base of the stump, are passed through the outer cecal coats on the opposite side. As a rule, four or five Lembert sutures suffice to effect accurate sero-serous approximation over the thinly compressed cauterized stump.

Before the clamp is removed, the first tie is made in all of the Lembert sutures, that is, the ends of each suture are crossed to the opposite sides making the customary single turn about each

other. As the forceps are removed, traction upon these ends draws the serosa from the two sides together. The second tie securing the knot and accurately apposing the peritoneum from each side is not made until the stump canal is sounded.

Instead of using the Lembert sutures, time may be gained and the number of knots reduced by introducing the needle into the cecal coats parallel with the clamp jaw emerging on the cecal serosa on the same side about one fourth of an inch from the point of entrance, then passing the needle under the external cecal coats on the other side of the forceps jaws in the opposite direction, that is, inserting a mattress suture. Three of these mattress sutures usually suffice, equalling, as they do, six Lembert sutures. These double sutures should not be confounded with the Halstead sutures or double Lembert sutures which require two thrusts of the needle on each side of the wound and which would be difficult to apply in this particular instance since in their application the needle must pass at right angles to the forceps, this involving turning of the forceps first toward one side and then the other, such manipulations favoring accidental separation of the stump from the cecum.

When the mattress sutures are used, the first tie is made as is described above, and the crossed ends drawn as the clamp is slipped backward from under the middle portions of the sutures, releasing the linear cauterized stump. There is hardly an instant at which there is a possibility of pus or any infective matter from the lumen of the appendix or cecum escaping into the peritoneal cavity.

The jaws of the forceps are so light as to cause very little contusion or devitalization of the tissues of the stump beyond that caused by the cautery. The use of the forceps minimizes hemorrhage and will in most cases shorten the time of operation. As to the use in general of the cautery for the separation of the appendix, one can hardly find a valid argument against it, unless it be said that the heat of the cautery must burn the serosa of the cecum. This is not the case. The instrument used is a light cautery blade and not a heavy poker-like instrument, and the heat, while it suffices to separate the appendix and destroy bacteria, is so slight as to have no effect upon the serosa lying under the jaws and shields of the clamp. The heat at the upper margin of the jaws of the clamp seals the wound margins of the stump.

McBurney and many others cauterize the stump after removal of the appendix. Why, therefore, not secure the additional safe-

guard against infection by making an igni-amputation of the appendix with the cautery? In most cases, a separation may be accomplished with the cautery as quickly as with the knife, and certainly with greater safety.

Where it is not possible to approximate the peritoneal surfaces, and bury the stump that the inflamed or septic appendix base may be sealed in, this clamp may not be applicable; nor are the other ordinary methods applicable here, for, as is well known in such a case, the stump must be united by sutures to the abdominal incision so that should secondary perforation occur the cecal contents may have a short free avenue of escape.

It has been contended that when the appendix is found to have been displaced remotely from its normal position, or lying deeply, such a clamp could not be used. No doubt in rare instances, conditions demanding isolation of the vermiform appendix may present themselves, the appendix lying so remotely from the abdominal incision and so firmly adherent that such a clamp could not be applied so readily as the circular ligature.

It is well known, however, that almost every inflamed appendix can be and is brought into the abdominal wound for treatment. With the appendix in the abdominal wound and the shielded clamp applied, the operator may work upon a convenient platform which effectually closes off the peritoneal cavity. The appendix stump is firmly held in the abdominal wound by the clamp until the sutures are in place. This cannot be so well done with guy lines or fingers.

Dr. Howard Kelly has asked whether stricture of the cecum is not likely to follow the use of this clamp. This has never occurred and there is no valid reason why the use of this clamp and the light cautery should ever produce stricture of the cecum, for the sutures are inserted no farther from the base of the appendix when the clamp is used than when the other methods are employed. In nine cases out of ten, the appendix base is compressed to the thinness of a thick piece of paper and the cauterized edge within the jaws is simply a line.

The use of this clamp does not require that the abdominal incision be any longer than that which is ordinarily made. No difficulty is experienced in making this operation through the small gridiron incision; at any rate, it is not the part of good judgment to detract anything from thorough workmanlike treatment of the stump in order to keep the abdominal incision down to an inch and a half. If the intra-abdominal manipulations are quickly and

precisely executed in such a manner as to bring the best results, it is a matter of minor importance if the incision be slightly more than an inch and a half in length.

The forceps should have slender jaws beveled on the under side to avoid cutting the serosa of the cecum where they compress.

In the use of this clamp the "Gabel und Messer Chirurgie" suggested by Koenig is practiced. That is, the appendix may be removed, the operator's fingers at no time touching the serosa.

STUDY OF A SPECIMEN OF OVARIAN PREGNANCY.¹

BY

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(With Nineteen Illustrations.)

THE following notes concerning a case of ovarian pregnancy have been kindly sent to me by Dr. E. Evans, of La Crosse, Wisconsin:

The patient was thirty-six years of age and had been married ten years. Menstruation began at eighteen; it had always been regular, of the 28-day type, and five to six days in duration. The quantity was moderate. There was always migraine at the beginning of the flow and some pelvic pain throughout.

She had been twice pregnant. The first pregnancy ended prematurely in the eighth month; the last went to term, eight years ago.

She menstruated normally July 4, 1903. Soon afterwards the breasts became tender, firmer and larger. Nausea gradually developed. There was no period in August and she considered herself pregnant.

On September 7th, while in church, she was taken with severe

EXPLANATION OF PLATE I.—Fig. 2. Posterior view of specimen. Life size.

Fig. 3. Section of specimen. The wall of the gestation sac, the amniotic cavity, and the intervening extravasated blood containing chorionic tissue are seen.

¹Read before the American Gynecological Society, May, 1904.



FIG. 3.



FIG. 2.

cramps in the abdomen. Pallor of the face was noticed and she felt somewhat faint. She was able to walk to her home, where she went to bed, the pains being relieved by hypodermic injections of morphine.

On the following day blood escaped from the vagina, continuing about the same time as her normal menstrual flow. It contained clots and shreds of tissue. Colicky and labor-like pains were felt, causing her to remain almost continuously in bed, mor-



Fig. 1.—Life-size drawing of specimen; external (lateral) aspect. The relation of the ovarian fimbria is seen.

phine being frequently necessary. On the first of October blood again appeared and continued to flow several days.

On October 6th Dr. Evans described the condition as follows:

The abdomen was tender to pressure in the right iliac region. On bimanual examination the uterus was found to be normally placed, slightly enlarged and movable. The left tube and ovary were normal. On the right side of the uterus a rounded mass larger than the uterus and distinct from it was easily felt. It was tender to pressure, and only slightly movable.

Abdominal section was then performed. Half an ounce of dark fluid was found in the utero-vesical peritoneal pouch. The swell-

ing on the right side of the uterus was attached to the rectum and pelvic wall by many delicate adhesions. The right Fallopian tube was freely movable above it and was removed along with the swelling.

The specimen was placed in hardening fluid by Dr. Evans at once and sent to me. I immediately made drawings of the external appearance and of a section through the mass, small portions being removed from various parts for microscopic study. The drawings of the microscopic appearances have been made by my assistant, Dr. C. Wahrer.

Naked Eye Appearance.—The ovarian swelling is an irregularly rounded mass, measuring 8 cm. vertically and 7 cm. in its other diameters. In its upper fourth the surface is somewhat smooth and dull gray in color; the remaining portion is marked with knob-like elevations, varying in width from 3 mm. to 3.5 cm. They are dark brown or purple, the intervening depressions being much lighter in color. The wall is intact, no indication of rupture being present.

At intervals roughened areas are found indicating the site of former adhesions. Attached to the upper portion of the mass is the upper part of the broad ligament in which remains of the organ of Rosenmüller are visible. The greater portion of the Fallopian tube is present, measuring 9 cm. from the divided end to the extremity of the ovarian fimbria. The tip of the latter is in close contact with the ovarian swelling, though distinct from it. No evidence of tubal abnormality is apparent.

On section two portions are to be distinguished, viz., a thin peripheral layer and a large medullary area.

The peripheral layer forms a definite outer wall, concentrically striated, gray in color, here and there tinged pink, and containing many blood-vessels.

The greatest thickness is found at the upper portion, near the junction of the broad ligament, where it measures 5 to 7 mm. Towards the lower two-thirds the rim diminishes in thickness, that part farthest from the broad ligament being less than 2 mm. The medullary area forms the main portion of the mass. It has a mottled appearance, presenting pink, red, brown, purple, gray and yellow areas. Striation is everywhere seen, being irregularly or, in parts, radially marked.

Towards the lower and outer portion, just external to the middle of the swelling, is a cavity (amniotic), whose lining is smooth and glistening and of a blue gray color. It contains a few drops

of turbid fluid. It measures 2.2 cm. transversely and antero-posteriorly, and 1.5 cm. vertically. Its shape, therefore, corresponds closely to that of the entire swelling.

Microscopic Appearances.—The peripheral layer is composed of connective tissue, the fibers of which run in all directions, though for the most part they are arranged parallel to the surface, and for the most part closely packed together. The connective tissue cells are fairly regular in size and are mostly spindle-shaped, though some round and oval cells are seen. They correspond in size to those found in the normal non-pregnant ovary. Here and there a few leucocytes and red blood corpuscles may be found extravasated in the connective tissue. At intervals large rounded spindle, oval or polygonal cells, varying somewhat in size, are found in the connective tissue. They possess usually a well-defined border, the cell-substance presenting a more or less homogeneous consistence, in which under a high magnification a reticulated structure can generally be distinguished; the nucleus is large and stains deeply, the nucleolus being well marked. In some cases two nuclei are found, occasionally three. In some cases the cells have a hyaline appearance, and their outlines may be lost. They may be blended with other cells or with surrounding connective tissue, presenting hyaline degeneration. In these the reticulated structure may be lost; they may be vacuolated and the nuclei may be irregular or fragmented. These cells are mostly found near large blood-spaces in that part of the gestation-sac near the hilum and in the layers nearest to the ovum. I have not noticed any in the remaining thin portion of the sac-wall. Away from the neighborhood of the blood spaces, as a rule, few of these cells are found and they are usually single.

The determination of the nature of these cells is a matter of much difficulty. They bear a closer resemblance to decidual cells than to any other. That they are wandering cells derived from the syncytium does not seem likely, because the cell substance is not so dense as that of the syncytium found on the chorion, and the nuclei are much larger. Moreover, in the majority of instances there is a definite cellular arrangement, the outline of each cell being well marked; they are not the irregular nucleated strands which are found invading the mucosa in uterine and tubal pregnancy. The cells are also very much larger than those of the Langhans layer of the chorion.

They bear some resemblance to wandering lutein cells, but the only portion of corpus luteum found in the specimen is situated at

a considerable distance from that part of the wall in which the large cells are chiefly noticed and its cells are smaller than those under consideration and much degenerated. Moreover, the characteristic yellow pigment of the lutein cells is absent. Many of the cells resemble those found lining the wall of some blood-sinuses, and indeed in some parts seem to be continuous with the latter, which appear to be proliferated endothelium. The extension around vessels of proliferated endothelium (trophospongia) has been described by Hübner as being characteristic of the changes in the mucosa of the hedgehog during early pregnancy. I have also observed the process to a limited extent in one specimen of human tubal gestation. The appearance presented in certain parts of my specimen of ovarian pregnancy is somewhat suggestive of a similar change.

The portion of the sac-wall nearest the hilum bears most resemblance to normal ovarian tissue. A few primary Graafian follicles and remains of corpora albicantia are found. No large follicles have been seen in the sections examined. It is evident that many follicles have been destroyed by the pressure exerted by the great distention of the ovary due to growth of the ovum and blood-extravasation. In the large thinner portion of the sac-wall no follicles can be found, nor are there many blood vessels. The latter are most numerous in the thick portions of the wall nearest the broad ligament. In some of the arteries thickening of the intima is found as well as hyaline degeneration in the wall. The latter change is also found in the walls of veins.

Many of the capillaries and venules are distended forming large blood-sinuses. These are found especially in the deeper layers of the gestation-sac, nearest the hilum. Some of them open directly into the intervillous space. In many the endothelial lining is very distinct; in others very few cells are found.

Here and there these spaces are lined by the large cells to which reference has been made. They are arranged as a single layer or in several layers, extending sometimes more or less continuously around the lumen, but most frequently occurring in lo-

EXPLANATION OF PLATE II.—Fig. 4. Complete section extending from surface of ovary to amniotic cavity. The largest portion consists of extravasated blood and fibrin in which villi are seen. *a.* Amnion and chorion. *b.* Ovary. $\times 7\frac{1}{2}$.

Fig. 5. Cortex of ovary. In the deep layer, nearest the ovum, large blood-sinuses are shown. *a.* Surface. *b.* Sinus. $\times 7$.

Fig. 14. Degenerated villus lying in blood-clot. $\times 87$.

Fig. 14.



Fig. 5.

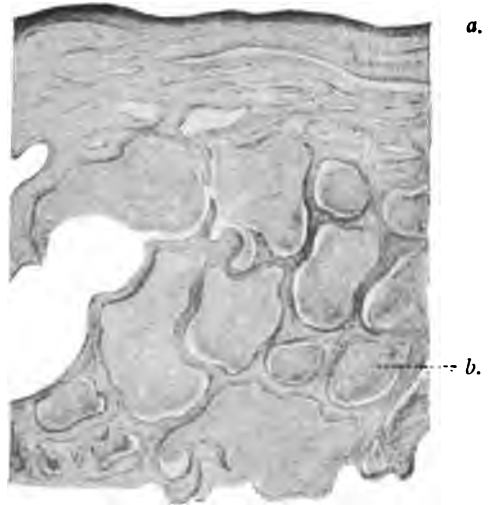
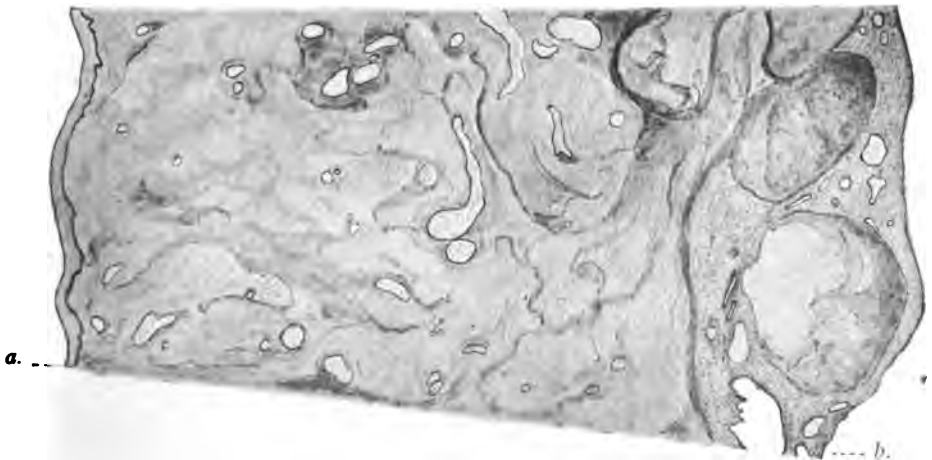


Fig. 4.



OVARIAN PREGNANCY—WEBSTER.

calized areas. These cells are epithelioid in nature and are more or less irregularly rounded. Their outlines are distinct; the cell-substance is composed of a network which varies in density, but is usually loose. Some of the cells may have a hyaline appearance; they may be vacuolated or the nuclei may be fragmented or irregular. The nuclei are single or double. In some parts these cells appear to be extending into the surrounding connective tissue.

Hyaline fibrinous degeneration to a slight extent is found in the connective tissue of the thick portion of the gestation sac near the

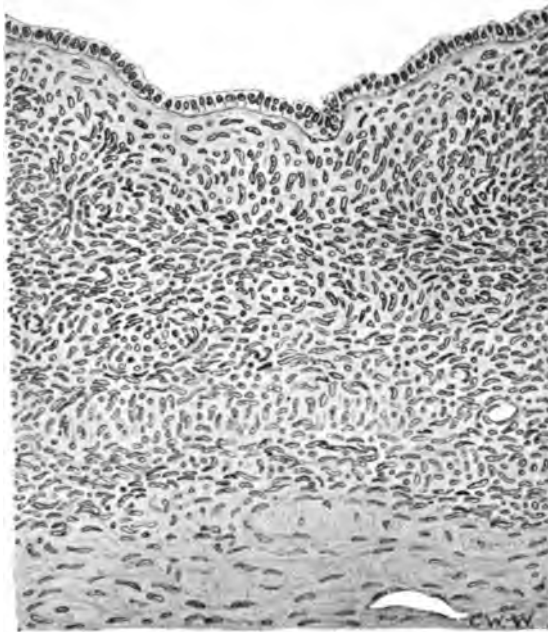


Fig. 6.—Section of cortex with germinal epithelium on the surface. $\times 175$.

intervillous space, though in places it is difficult to distinguish this from layers of fibrin formed from extravasated blood.

Small pieces of fetal syncytium are found in the thickest part of the sac-wall. In most instances they appear to lie in spaces. There is very little indication of direct invasion of the wall from the surface to which the ovum is attached. The syncytium and villi are found on the latter only at considerable intervals, a layer of thick fibrin formed from extravasated blood occupying the great extent of this area.

The amnion is fairly well preserved, its epithelial cells being

mostly cuboidal, the height varying at different parts. In many parts no distinction between cells can be made out. In parts the latter are flattened parallel to the surface, and are frequently shrunk. Its connective tissue is a thin layer which for the most part is closely blended with the chorion external to it. The delicate loose connections so common in uterine pregnancy are scarcely found. The connective tissue has a swollen hyaline appearance in many parts.

The chorionic epithelium consists of syncytium and Langhans cells arranged in two or more layers. Degenerative changes are present, there being vacuolation shrinkage and vacuolation of

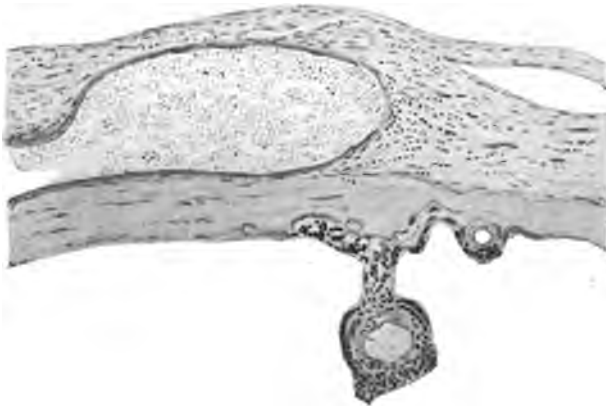


Fig. 7.—Villus attached to gestation-sac wall consisting of ovarian stroma. There is some hyaline degeneration in the deeper wall of the latter. $\times 41$.

nuclei, invasion by leucocytes and blending of many of the Langhans cells. Buds of syncytium and villi are attached to the chorion, and resemble those structures as they appear in uterine and tubal pregnancy.

Between the chorionic layer and the gestation sac-wall of ovarian tissue, there is a large mass of tissue consisting of blood in various stages of alteration and chorionic elements, *e.g.*, villus-stems, villi and masses of syncytium in various stages of degeneration. In the most extreme degree of the latter change, the villi and syncytial strands have a hyaline appearance, no nuclei or cell outlines being visible. Here and there sections of syncytium and villi are found with very little trace of degeneration. In the majority of villi retrogressive changes are found, *e.g.*, cellular ir-

regularity, vacuolation, shrinkage, disappearance of nuclei, hyaline changes, etc.

Remarks.—The topographical relationships of the gestation-sac in this specimen are beyond dispute. The ovum is situated entirely within the substance of the ovary. It is interesting to com-

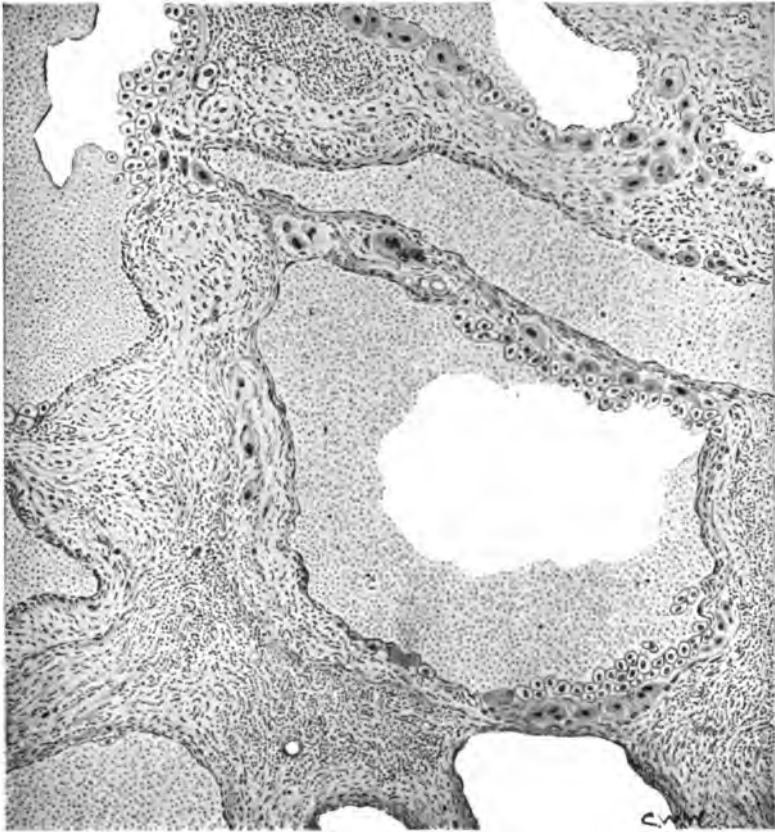


Fig. 8.—Ovarian stroma, near ovum, containing large blood-sinuses. Large cells lining the vessels and in the stroma are shown. x87.

pare the conditions described with those found in other specimens. The most careful accounts hitherto published are those by Van Tussenbroek, of Amsterdam, and Thompson, of Portland, Maine. From the extent of corpus luteum in relation to the outer part of the ovum in their specimens, these observers believed that the gestation must have begun in the ripe Graafian follicle. In my speci-

men no such relationship of corpus luteum is found, and if the fertilized ovum developed in a Graafian follicle it was one in which



Fig. 9.—Layer of syncytium on inner surface of gestation-sac wall (ovarian stroma). x205.

there was no formation of corpus luteum. Those who describe follicular development of ovarian pregnancy usually assume that the ovum is fertilized *in situ* in the follicle. While this is possible



Fig. 10.—Villus attached to gestation-sac wall. Syncytium is seen on the surface of the latter. Decidua-like cells are seen in the stroma. x205.

it has not been proven, even though Stratz has demonstrated the entrance of spermatozoa into a ruptured follicle in the ovary of Sorex. The absence of a corpus luteum in the wall of the gesta-



Fig. 11.—Two large detached cells lying in ovarian stroma. x205.

tion-sac in my specimen certainly seems to prove that the ovum has developed elsewhere than in a ripe follicle.

Until we possess specimens representing earlier stages of preg-

nancy we shall be ignorant of the original relationships of the ovum. In some of those described as primarily follicular it may be that embedding of the ovum occurred external to a follicle and that afterwards extension into the latter took place.

From what we know of the marked phagocytic properties of the



Fig. 12.—Section of amnion and chorion. $\times 203$.

early epiblastic covering of the ovum, whereby rapid embedding within the uterine mucosa is brought about, it is not at all impossible that a similar process may sometimes occur on a flattened area or in a depression on the surface of the ovary. It has certainly been demonstrated in connection with the ovarian fimbria.

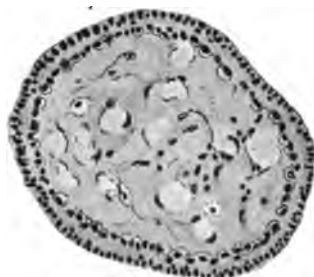


Fig. 13.—Transverse section of villus. $\times 87$.

The method of the early embedding of the ovum in ovarian pregnancy is certainly the feature of greatest scientific interest in connection with the whole subject. For a number of years I was one of a large number who were sceptical as to the existence of primary ovarian gestation, considering that specimens previously

so described were either teratomata or pregnancies in the tube or its derivatives which had entered into intimate relationships with the ovary. Owing to the demonstrations of Van Tussenbroek, Thompson and a few others, all scepticism as to the occurrence of primary ovarian pregnancy must be put aside. For some years I have held that, on phylogenetic grounds, there is a strong reason in favor of believing that the fertilized ovum in the human female can only *begin* its development in tissue derived from the Müllerian tract. At the present time there are doubtless many who think that the recent demonstrations of ovarian gestation necessitate a

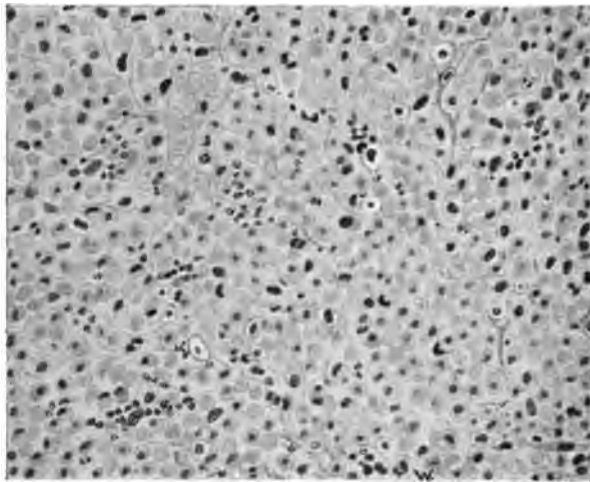


Fig. 15.—Portion of degenerating corpus luteum. $\times 206$.

modification of this view. Such a conclusion must be considered as hasty and ill-considered.

We know that a fertilized ovum may be embedded on a very small portion of a fimbria or on a detached portion of the Fallopian tube attached to the broad ligament. If it can be established that Müllerian tissue may occasionally be found in the ovary it is reasonable to suppose that embedding of an ovum may take place in this tissue. The occasional blending of Müllerian and ovarian tissue has been abundantly proven, both by macroscopic and microscopic demonstration. Take, for instance, the relationships of the ovarian fimbria. In some cases its outer end may not reach the ovary; sometimes it may just touch it; sometimes its tip may be embedded in the ovary; sometimes a considerable extent of the

fimbria may lie against the ovary or be adherent to it; in some cases, there may be a break in its continuity, so that a small outer portion may lie close to the ovary detached from the main part. Marchand has directed attention to the early close relationship between the tubal epithelium and that covering the surface of the ovary and has pointed out that they are one and the same surface. He believes that in some cases the line of demarcation, instead of being at the end of the ovarian fimbria, might reach over to the

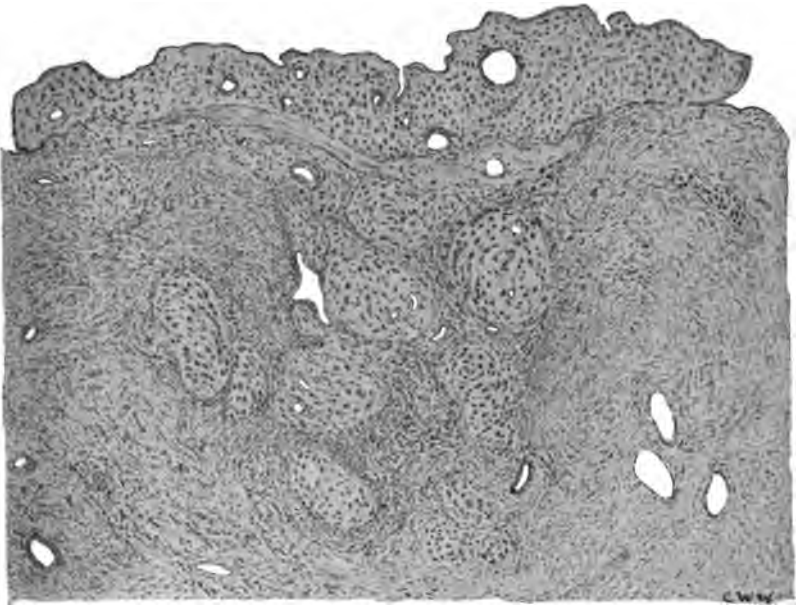


Fig. 16.—Changes in the ovary during uterine pregnancy. Area containing decidua-like cells at surface of ovary. $\times 41$.

The specimen was removed from a woman in whom porro-Cæsarean section was performed on account of pelvic contraction.

lateral portion of the ovary and that from it processes might extend into the cortex of the ovary. The observations of De Sinety and Melassez in 1878 seemed to establish the correctness of such a view. Other studies, especially those of Whitridge Williams, leave no doubt as to the occasional extension of Müllerian tissue into the ovary.

In this connection I wish to direct attention to the recent observations of Schmorl and others to the occasional occurrence of small localized areas of decidua-like cells in the ovary in cases of

uterine pregnancy. I have recently examined ten specimens in my museum and have found these changes in four ovaries. In each instance the areas were situated in the cortex at or near the surface, sometimes projecting slightly from the latter, sometimes extending for a considerable distance into the cortex. The cells in these areas present the closest resemblance to the uterine decidua in normal pregnancy, the cells showing similar variations in size and shape. The line of demarcation from the surrounding ovarian stroma is always well-marked, giving the impression that the two tissues are distinct. Usually, these areas contain dilated

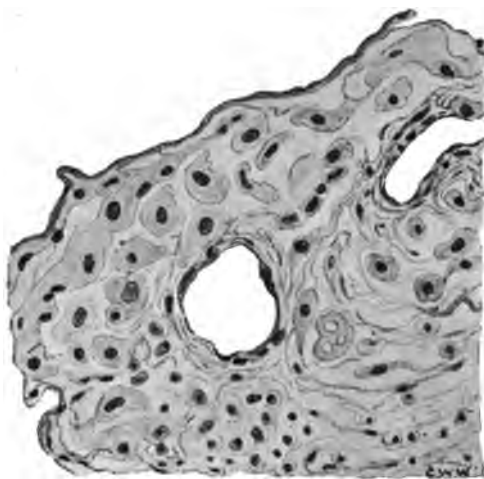


Fig. 17.—Changes in the ovary during uterine pregnancy. Area containing decidua-like cells at surface of ovary. $\times 205$.
From case of porro-Cæsarean section.

blood-vessels, which are not found in the neighboring unchanged ovarian stroma. I have never found such areas in ovaries removed from nonpregnant women. They are not peripheral sections of the theca interna of ripening Graafian follicles or of the corpus luteum, which is a derivative of the latter. The cells of the latter may undoubtedly closely simulate decidual tissue, both in their well-formed and in their degenerated condition, but the special peculiarity which distinguishes them and their relationships to the follicle usually suffice to establish their identity.

These cortical localizations of decidua-like cells in the ovary of pregnancy certainly suggest some special characteristic which makes the cells capable of undergoing the same genetic reaction

which is ordinarily found in the uterine and tubal mucous membranes when pregnancy develops in relation to these tissues.

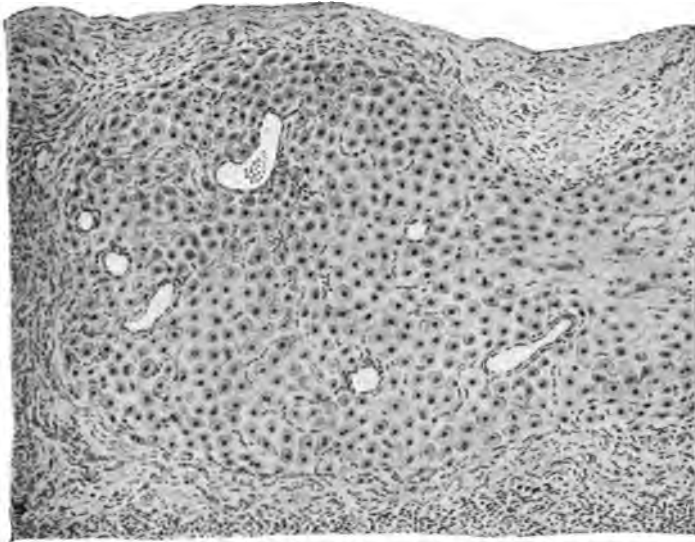


Fig. 18.—Changes in the ovary during uterine pregnancy. Area containing decidua-like cells at surface of ovary.

The specimen was removed from a woman whose uterus was removed in the fourth month of gestation on account of fibroids.

Tentatively, I advance the view that these areas represent detached portions of Müllerian tissue which have become attached

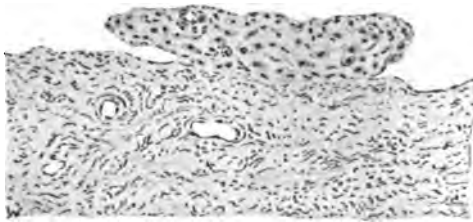


Fig. 19.—Changes in the ovary during uterine pregnancy. Area containing decidua-like cells at surface of ovary. x87.

The specimen was taken from a woman who died of eclampsia in advanced gestation.

to the surface of the ovary. Occasionally, I have found in the substance of such an area a gland-like space lined with columnar

or cubical epithelium. The latter may of course be only a derivative of the surface germinal epithelium, but it may represent included Müllerian epithelium.

It is possible that the special genetic action in these areas may sometimes determine the embedding and growth of a fertilized ovum in the ovary, and if the opinion that these areas are Müllerian in origin be correct it is not unlikely that all cases of pregnancy in ovarian tissue may still serve to support the dictum which

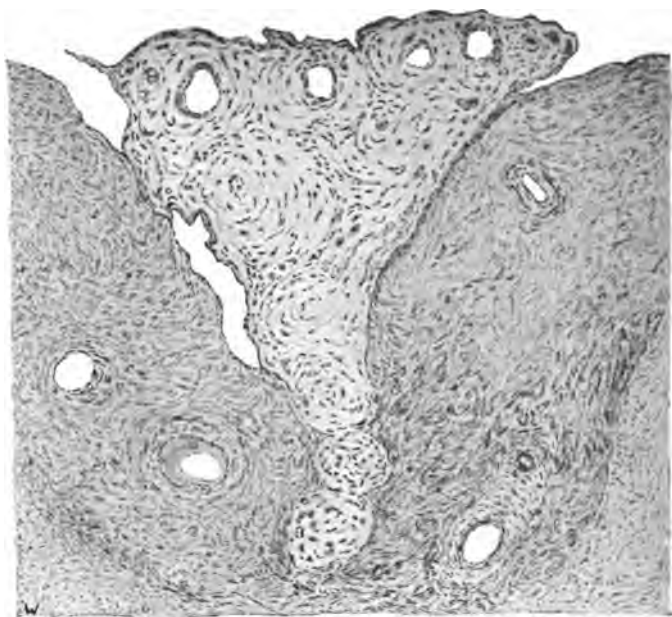


Fig. 20.—Changes in the ovary during uterine pregnancy. Area containing decidua-like cells at surface of ovary.

The specimen was removed from a woman in whom porro-Cæsarean section was performed on account of pelvic contraction.

has been expressed, viz., that the fertilized ovum in the human female begins its development in Müllerian tissue. While the proof of this is impossible, all *à priori* evidence is in its favor. Those who attempt to overthrow the hypothesis certainly undertake a heavy task in trying to establish an exception to the uniformity of performance of one of the most highly specialized functions in the human body.

It may be true that no definite decidual layer is found in rela-

tionship to the villi in the specimens demonstrated by Van Tussenbroek, Thompson and myself. Though Van Tussenbroek in her first description mentioned a decidual layer, she afterwards stated that this was an error, the cells being in reality lutein cells of the corpus luteum. Her final account is doubtless in the main correct, but she cannot deny the possibility that some of the large cells were decidual. However, admitting that no decidual layer is found in specimens as advanced as those mentioned, we do not know that they were not present in a much earlier period when

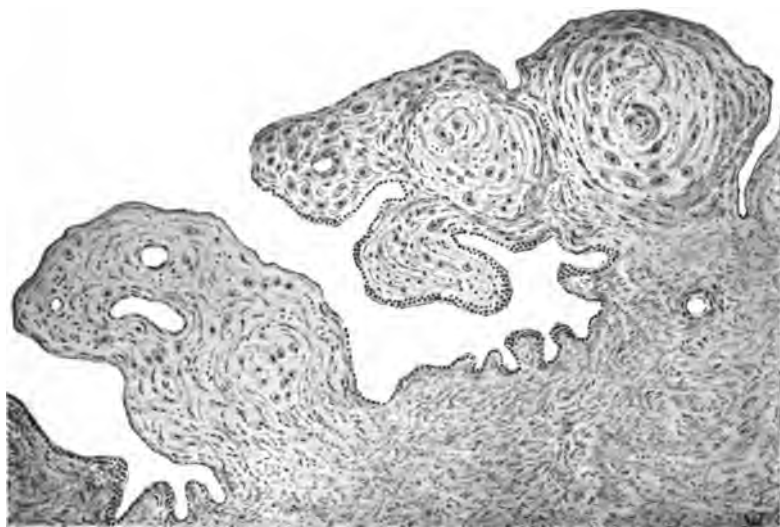


Fig. 21.—Changes in the ovary during uterine pregnancy. Areas containing decidual-like cells at surface of ovary. $\times 87$.

The specimen was taken from a woman in whom abdominal hysterectomy was performed in the seventh month of gestation on account of uterine fibroids.

the ovum was very much smaller. One of the small decidual areas above described would very soon disappear as a result of the outward pressure of the expanding ovum, as well as of its phagocytic powers, if there were no more tissue capable of undergoing the change, and it is quite evident that the ovarian stroma proper does not tend to take on decidual characters.

Though no definite layer of decidua is found in my specimen, I have little doubt that the scattered groups of large cells found in the ovarian stroma, nearest the ovum, are decidual in character.

Even in tubal pregnancy, where decidual changes are always present in the early stages, there may be a marked disappearance as pregnancy advances, the production of cells being evidently much poorer than in the uterine mucosa in normal pregnancy, though in the latter there is a considerable range of variations.

For several years I have held the belief that decidual transformation is peculiar to the Müllerian tract. The presence of occasional areas of decidua-like cells in the ovary in pregnancy has been mentioned as an exception. From what I have already stated it remains to be proved that these areas are not Müllerian in origin. Small localized decidual nodes have also been found in the broad ligaments. I believe that these are also derived from detached portions of Müllerian tissue which are quite common, especially in the upper portions of the broad ligaments. Similar areas have also been found under the peritoneum of the pregnant uterus, but this cannot be considered as at all remarkable, however exceptional it may be, since there is no doubt as to the Müllerian nature of the uterus. I have also found decidual transformation occasionally in the connective tissue between muscle-bundles in the middle of the wall.

Similar areas have also been described under the peritoneum of the pouch of Douglas, and it is not at all impossible that these may be detached portions of Müllerian tissue.

100 STATE STREET.

URETERO-LITHOTOMY.¹

BY

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History.—The history of this operation is not devoid of interest. In 1856, Gigon recommended opening the ureter through the loin to remove ureteral calculi. In 1870, Bryant, at Guy's Hospital, incised and explored the renal pelvis through a loin incision. In 1882, Bardenheuer incised and explored the ureteral pelvis for calculi and sutured the wound made in it. In 1884, Henry Morris proposed rapid dilatation of the female urethra, and urethrotomy just in front of the prostate in the male, and then proceeding transvesically to remove calculi from the very lowest portion of the ureter. At the same time Emmet did vaginal ureterotomy, removing calculi with the curette. In 1885, Cullingworth planned and performed uretero-lithotomy through a lumbar incision. In 1887, Ceci removed a calculus from the lower portion of the ureter by the rectal route. Desault, in 1887, used and recommended his kiotome for incising the uretero-vesical junction, in order to facilitate transvesical extraction of calculi from the lower portion of the duct, and in 1888, Richmond, of Missouri, succeeded in removing a stone lodged near the exit of a ureter by means of rapid urethral dilatation and the introduction into the bladder of a finger and tenaculum. In 1886, Israel reported removing calculi from the upper part of the duct. Bergman, Kirkham, R. B. Hall, Twynam and others did this operation previous to 1890.

Size and Number of Calculi.—The sizes of ureteral calculi vary from the merest particle to dimensions of several inches. According to Henry Morris, Le Dran quotes a case in which there were several calculi, weighing together three ounces, impacted in the middle part of a ureter. In one of my cases the calculus weighed 1310 grains, and had diameters of $2\frac{3}{4}$, $1\frac{3}{4}$ and $1\frac{1}{2}$ inches. This

¹Read at meeting of American Gynecological Society at Boston, Mass., May 24, 25 and 26, 1904.

is larger than any I have found recorded. Sometimes several are present, Morris having removed nine from the lower part of one ureter. In some autopsies both ureters have been found filled by a large number of impacted calculi. To find two or three at different points along the duct is far from uncommon.

Routes.—The routes for reaching and extracting ureteral calculi are the transperitoneal and the extraperitoneal. The latter may be subdivided into loin, inguinal, vaginal, rectal, sacral, perineal and transvesical. The transperitoneal route should never be the one of election, as the danger of peritoneal infection from the urine is too great. Infected urine is a condition so constant in ureteral calculus that it is practically never absent and should almost never be allowed to come in contact with the peritoneum. It may occur, however, that a calculus in the duct may first be discovered or diagnosed, when the abdominal cavity is opened for some other condition. In such event one may in the absence of symptoms indicative of urinary infection and under favorable conditions remove the calculus transperitoneally. This is particularly true regarding the portion of the ureter under the pelvic peritoneum in women.

Of the extraperitoneal routes the selection will depend largely upon the location of the calculus or calculi, though the operation of Ceci of removing it through the rectum could only be considered justifiable when the stone has practically sloughed through into the rectum. Surely the danger of ascending renal infection is very marked. When the calculus lies in the intravesical portion of the ureter of a woman it may usually be removed by dilating the urethra and then the ureteral opening and extraction through both. Morris removed a calculus from the lower part of the duct through an incision along the border of the sacrum. In women, the lower three inches of the duct may be fairly well reached through the vagina. Especially is this route available for those cases in which the stone lies in the broad ligament portion. Through a lateral incision the perineal route has its advantages in the male but not in the female. This leaves for consideration the routes that lie above the bony pelvis. Of these two neither has any advantage over the other as the indications for each differ from those for the other. In 64 cases of ureteral calculi operated on by the extraperitoneal route the calculus was located 22 times in the ampulla and adjoining inch; 17 in the duct at the iliac crossing; 18 in the lowest inch; 4 at the entrance to the broad ligament; 1 both near the ampulla and at the iliac

crossing; and in 2, the ureter was filled with calculi. This would seem to demonstrate the loin route to be the most frequently employed. If the loin incision be prolonged downward but a little access to the portion just above the iliac crossing will be afforded, and thus 61 per cent. of the cases of ureteral calculi may be treated by this route. I was not able to ascertain the sex in these collected cases and cannot state how many of the 18 in the lowest inch were in women, but in that sex the vaginal route as a rule is the best, though the transvesical should not be ignored. In the male the inguinal is the best. When the calculus is at the entrance into the broad ligament the inguinal is perhaps preferable to the vaginal route.

In a class of cases characterized by the stone having been lodged in the intravesical portion of the duct and later sloughed into a pocket in the bladder wall which it has made for itself the vaginal and inguinal routes are the only safe ones, though in so stating I am not unmindful of the number of cases in which suprapubic cystotomy has been done.

Removing the Calculus from the Ureter.—For removing the calculus from the ureter the different procedures have been—1, pushing the stone in a reverse direction to its passage and extracting it through the wall of the duct at a more favorable point, or through the kidney structure; 2, dilatation of the portion of the duct below the calculus and removing the stone through the bladder; 3, longitudinal ureterotomy at the point of lodgment of the calculus; and 4, intraureteral injections of sterilized vaseline as recommended and employed by Schmidt, of Chicago. The first method has special advantages and is applicable to the whole length of the duct save the lowest inch. In many cases the kidney must be explored as well, and if the stone can be forced back through the kidney incision it is preferable to ureterotomy. Even if the kidney is not incised extraction after pyelotomy is better than by ureterotomy farther down as there is less apt to be interference with healing of the incised wound from necrosis or bruising and less danger of angulation or lessening of its caliber. When a stone, especially of the mulberry type, has been lodged at one point a considerable time it is apt to corrode to a marked extent the ureteral wall. Such corrosion interferes with good and prompt union if ureterotomy is done at that point. Therefore the duct should be opened at some point above the lodgment and at the same time conveniently reached through the operation wound. Here healthy tissue may be traversed that will be rapidly

repaired and with much lessened danger of ureteral constriction. When the calculus is lodged in the intravesical portion no doubt transvesical extraction is best. This may be done by dilatation of the ureteral orifice, and the portion of the duct separating the stone from the bladder cavity. Should stricture within this portion be present it may be divided at the same séance. Young, of Baltimore, has found these in a few cases, and probably that was the condition noted by Desault in 1887 which gave birth to his kiotome. The ureteral dilatation and lithotomy mentioned may be done in most cases by the use of the cystoscope. But in some cases and especially when the calculus is large suprapubic or vaginal cystotomy will be required. When the calculus is lodged in the broad ligament, or in the male in the juxtavesical portion, great difficulty may be encountered in attempting to move the stone backward along the duct and dilatation of the untravelled portion rendered hazardous. Again the size of the calculus may at once preclude all possibility of such work. In a recent case, I found a calculus weighing 1310 grains and having transverse measurements the extremes of which at the largest point were $1\frac{3}{4}$ and $1\frac{1}{2}$ inches. In such instances nothing remains to be done but ureterotomy on to the stone in situ. The method of Schmidt is probably valuable in small calculi. Kolischer and himself have reported cases successfully treated with it and they are enthusiastic in their recommendation of it. I have had no experience with it but its innocence compared to the traumatism of other surgical interventions prompts me to decide to adopt it in cases in which the calculus is small except those in which it is lodged in the very lowest portion of the duct.

Searching for other Calculi.—When the stone has been removed search for other calculi should be made throughout the whole length of the duct, and if the loin incision be the one employed it is advisable to satisfy one's self that none is within the kidney. A sound may be gently passed upward into the calyces to assist in palpation though it may not furnish conclusive proof of the absence of renal calculi. Should ureteral constrictions exist they may be discovered by this systematic exploration of the duct. The possible existence of a second ureter similarly affected should not be forgotten nor should unnecessary traumatism be produced.

Treatment of the Ureteral Opening.—If the ureterotomy wound be through practically normal tissue and the ureter below it free from obstruction, sutures may be employed to close the duct. They should be interrupted, placed in two tiers and passed through

all the wall except the mucosa. Absorbable material for this purpose is certainly of special advantage. Even infected urine should not modify this plan nor should drainage influence it. If the tissue through which the incision is made be necrotic the open wound if small would probably be preferable. If however a large calculus be removed, the wound must necessarily be long and sutures must be employed, though leakage seems probable as the tendency to longitudinal constriction is great with the long open ureteral wound. Obstruction of the ureter below the wound would lessen the advisability of suturing, though not to its exclusion in all cases. If the function of the kidney has been destroyed by long standing complete ureteral obstruction sutures should not be used.

Drainage.—All uretero-lithotomy wounds should be drained. This is because the urine is practically never normal, therefore rendering wound infection probable. The possibility of urinary leakage subsequent to operation affords another positive indication for drainage.

THE PREVENTIVE TREATMENT OF PELVIC FLOOR LACERATIONS.¹

BY

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Introduction.—Pelvic floor injuries comprise ruptures of the fourchette, posterior vulval commissure, perineum, lower third of the anterior, posterior and lateral vaginal walls; and rectovaginal septum. The tissues involved may include the integument from the anal orifice to the posterior vulval commissure, the mucous membrane of the vulva, vagina, rectum; the cellular tissue; and the sphincter ani and levator ani muscles.

Preservation of the structures of the pelvic floor during the passage of the fetal head and shoulders has been placed by some authorities as second in importance only to preservation of the lives of the mother and child.

From this standpoint it is possible to discuss the entire mechanism and conduct of labor, with the one aim in mind of favoring

¹Read at meeting of Am. Gyn. Soc. at Boston, May 24, 25 and 26, 1904.

the pelvic floor under all circumstances when the more weighty conditions do not assert themselves. This has actually been done by Krantz¹ in a lengthy monograph.

The most important part of the management of the second stage of labor is the prevention of pelvic floor lacerations, lacerations of the fourchette in primiparæ; and superficial tears about the vulval orifice in both primiparæ and multiparæ often occur, are often unavoidable, and usually readily heal with simple asepsis. Deep lacerations are, I believe, avoidable in normal, ordinary cases of labor. The great importance of avoiding rupture of the pelvic floor cannot be overestimated. It is well known that a large proportion of gynecological cases owe their condition directly or indirectly to rupture of the pelvic floor muscles during labor.

All of us are familiar with the published statistics of the Obstetric Clinic at Halle. Here we are told that the results of ten years' observation with every known method of perineal protection were lacerations extending beyond the commissure in 21.1 per cent. of primiparæ and 4.7 per cent. in multiparæ.

The factors which tend directly or indirectly to produce pelvic floor lacerations are numerous, but for convenience we can arrange them in three major classes. (1) Anomalies of the expulsive forces; (2) anomalies of the vaginal and pelvic floor tissues; (3) faulty presentations and positions of the fetus and faulty mechanism of labor.

These three major causes can be more concisely stated as follows:—

(1) Too rapid expulsion of the fetus, so that tearing instead of stretching results; (2) relative disproportion in size between the presenting part and the parturient outlet; (3) a faulty mechanism of labor, whereby larger circumferences of the head and shoulders than necessary passes through the parturient outlet.

1. *Preliminary Digital Stretching of the Parturient Outlet.*—From an extended clinical experience extending over a number of years, I can speak most enthusiastically of the preliminary digital stretching of the vulval outlet in primiparæ, and especially in elderly primiparæ, as a prophylactic measure in perineal protection. Of course the method has been in use for years, but I would urge its more extended use in those cases in which the parturient outlet and the lower third of the vagina are small and rigid. I have obtained surprisingly good results by passing two fingers, palmar surfaces down, into the parturient outlet, and making inter-

¹Krantz: "Die Ätiologie d. geb. Dammverletzung." Wiesbaden, 1900.

mittent backward and lateral massage-like pressure. The motion is a sort of eccentric massage.

I am accustomed to use two fingers of one rather than of both hands for the purpose.

The assistance of ether or chloroform is most valuable. Fifteen or twenty minutes of this firm outward and backward rotary massage-like stretching will usually sufficiently enlarge the most rigid parturient outlet.

I have demonstrated the method repeatedly to the Bellevue Hospital internes and physicians in consultation practice, upon



Fig. 1.
Fetal cadaver before cleidotomy.



Fig. 2.
Fetal cadaver after cleidotomy.

cases in which the birth of the fetus without entire loss of the pelvic floor at first appeared impossible.

In a particular instance, an elderly primipara, 39 years of age, the wife of a physician, I thus dilated an exceedingly rigid and small parturient outlet as a preliminary to a low forceps operation. The husband, who watched the procedure, was amazed at the result, as no laceration of any moment subsequently occurred.

I confess that there are certain kinds of pelvic floor rigidity that will resist this and every method of prophylaxis, and tearing instead of stretching will occur.

One patient in private practice I have delivered three times, yet

in spite of every precaution, exclusive of episiotomy, perineal laceration, to the so-called second degree has taken place in each confinement. Since I have more generally used this method of perineal dilation, I have seldom been compelled to resort to episiotomy, and that only in cases of emergency, where time was wanting to employ the stretching method.

2. *Episiotomy*.—I have nothing new to offer upon this subject. My belief is that the operation is one for the novice in obstetrics. The greater the clinical experience the more infrequently will the operation be required.

3. *Head Delivery*.—In respect to head delivery I have again nothing that is new to offer.

I endeavor *first*, to have the delivery of the head so slow, that stretching and not tearing of the parts result. Because the pelvic floor muscles are relaxed in the interval between the uterine contractions, head delivery is more safely accomplished at this moment, hence I secure delivery of the head during the interval.

4. *Cleidotomy*.—Cleidotomy or division of both clavicles in *dead* fetuses as a preliminary to delivery of the shoulders, has for its object the diminution of the bisacromial diameter. This simple operation, rarely mentioned in obstetric text-books, has never, I am sure, taken its proper place in obstetric surgery, as a valuable means of lessening maternal morbidity and mortality.

How often have we witnessed a difficult extraction of the shoulders in a generally contracted pelvis or outlet, after the perforation and extraction of the head?

I have seen twenty minutes consumed in the delivery of the shoulders. I have seen the head dragged from the body, by the excessive traction. I have had cases brought into my Bellevue Hospital service with the head delivered and the shoulders still within the pelvis. These last are usually midwife cases.

As a matter of routine in these cases I divide the clavicles, and it is amazing how the diminution of the bisacromial diameter thus produced, renders the subsequent extraction of the fetal shoulders a comparatively easy task, and quickly and completely changes the clinical picture for the better.

In my experience the operation readily reduces the bisacromial diameter from $4\frac{3}{4}$ inches (12.7 cm.) to 4 inches (7.5 cm.). (Figs. 1 and 2.)

For the operation I always use a pair of heavy straight or curved obstetric scissors of the Dubois type, two fingers of one

hand being used to guide the blunt points to the middle of each clavicle. It is usually necessary to strongly extend or flex laterally the fetal head so as to give room for the use of the scissors (Fig. 3).

5. *Shoulder Delivery*.—I firmly believe from years of careful clinical observation that the posterior shoulder is responsible for many instances of deep pelvic floor laceration. Further, that moderate ruptures caused by the passage of the head are often increased and rendered serious by the subsequent passage of the posterior shoulder.

Little importance is usually attached to the method of shoulder delivery, and it would appear that various methods are in vogue.



Fig. 3.—The operation of cleidotomy. Performed with long curved scissors. (From Edgar's "Obstetrics.")

Among five of the more recent textbooks upon obstetrics I find in one but eight lines devoted to the management of shoulder delivery, and in another ten.

One of these five authors advises the birth of the posterior shoulder first, the anterior being engaged behind the symphysis; the second the posterior shoulder first after the anterior has been brought under the symphysis; a third gives no specific directions whatever; and the fourth and fifth consider it immaterial which shoulder is first allowed to emerge from the outlet.

Observation will, I believe convince any one that considerable destruction of the perineum is often caused by the posterior shoulder.

The difference in the conformation of the head and shoulders readily explains the fact. The vertex is round and smooth with a

tapering extremity, and the alternate descent and retraction of the head in labor cause a gradual and uniform distention of the parturient outlet.

The bisacromial diameter measures much more than the dorso-sternal; again, the shoulders are irregular in shape as compared with head, having projections which stand out abruptly from the comparatively small and thin neck; further, the shoulders if left to spontaneous delivery are commonly delivered by a single uterine contraction.

Regarding the normal mechanism of shoulder delivery it is generally true that when the expulsion is purely spontaneous, the posterior shoulder is born first.



Fig. 4.—Shoulder delivery. First step. Directing the anterior shoulder well up behind the symphysis, thus securing the engagement of the cervico-acromial diameter.

Auvard found that in 29 cases the posterior shoulder came first in 16, and the anterior in 9 cases.

Leonet asserts that the anterior shoulder first disengages in 90 out of 100 cases, if the fetal head is not supported; that the posterior first emerges in 90 out of 100 cases if the head be supported.

I found that when the head was lightly supported, the posterior shoulder was born three times as often as the anterior in 69 primiparæ, and two and a half times as often in 68 multiparæ.

I further found from observations in 15 cases of spontaneous delivery in primiparæ, and 28 in multiparæ in both the dorsal and lateral postures, that posture of the woman does not appear to affect the mechanism of shoulder delivery.

I have been most successful with the following method of

shoulder delivery, and either the lateral or dorsal posture of the patient can be used at will. The method is not new. (1) The



Fig. 5.—Shoulder delivery. Second step. Delivery of the posterior shoulder.

delivery of the shoulders is delayed if possible until nearly complete rotation of the bisacromial diameter has taken place (Fig. 4). (2) The fetal head is taken in the hand and gently raised



Fig. 6.—Shoulder delivery. Third step. Delivery of the anterior shoulder by depressing the head, and, if necessary, by pressure upon the fundus

or pushed, so as to bring the anterior shoulder well up behind the symphysis, thus giving the cervico-acromial diameter of the fetus at the outlet instead of the bisacromial (Fig. 5). (3) The pos-

terior shoulder is now allowed to pass out spontaneously, and whenever possible manual extraction should be avoided, as this increases the risk of perineal rupture. (4) During the detention of the anterior shoulder behind the symphysis the fetal hand of the opposite arm lying across the fetal chest will usually soon appear in the vulva (Fig. 6).

I have found that delivery may be safely assisted by slowly flexing this forearm and arm out through the vulva and thus delivering the posterior shoulder by slight traction on the posterior arm.

(5) Should the foregoing be impracticable, and delay in the expulsion of the posterior shoulder occur, I have found gentle traction upon the head, the fingers encircling the neck, to be preferable to traction with a finger in the axilla.

(6) Should there be delay in the delivery of the anterior shoulder, after expulsion of the posterior, it is best remedied by making traction directly downwards, with the hands placed on the sides of the head, taking care not to make too great pressure on the perineum. As a last resort traction may be made by a finger in the axilla.

50 EAST 34TH STREET.

TRANSVERSE SUPRA-PUBIC DIVISION OF THE SKIN APPLIED FOR THE SIMULTANEOUS PERFORMANCE OF INTRA-ABDOMINAL (INTRA-PELVIC) WORK, AND OF INGUINAL SHORTENING OF THE ROUND LIGAMENTS.¹

BY

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ABOUT two years ago I read a paper before the "County Medical Society"; this was later published in *American Gynecology*, Oct., 1902, and a résumé of it appeared in *Centralblatt für Gynäkologie*, No. 50, 1902. In this paper I condemned without reserve the operation of ventrofixation and ventrosuspension of the uterus. Notwithstanding my objection to this operation I must acknowledge that one advantage is gained by ventrofixation over other methods of rectification of malpositions of the uterus, namely, the operator by opening the abdominal cavity is enabled to closely

¹Read before the California Academy of Medicine, April 26, 1904.

inspect the uterus and its adnexa and to perform such operations upon the same as he may deem necessary.

With the purpose in view of maintaining this advantageous feature of ventrofixation without suffering its disadvantages I suggested in the paper mentioned, to make a transverse division of the skin above the symphysis pubis (Küstner), open the abdomen, do any intra-abdominal or pelvic work that should be done, then from the same incision find the round ligaments on the outside of the inguinal canal, and perform the regular Alexander operation. At the time of the reading and publication of this paper I had not yet done this operation; I recommended it on merely theoretical consideration. But since that time I have had the opportunity to do the operation three times. The number of those operations must of necessity be small, for the simple reason that careful selection of suitable cases must be made, furthermore the material at my disposal is limited and of such a nature that I cannot very well make any experimentations.

The first case that I operated in this manner was reported before the "California Academy of Medicine" in April, 1903: it was published in the *Occidental Medical Times*, May, 1903, page 180, and following; two more cases were since added. These three cases have shown me the feasibility of the operation. I can now, from my own personal experience, positively assert that it is well possible to reach the contents of the pelvis, and to shorten the round ligaments outside the inguinal canal, with one and the same incision.

Two points seem to me well established in connection with this matter: First, the supra-pubic transversal division of the skin is a decided addition to our surgical technique. I have reported to this society on Nov. 26th, 1901 (published in *American Gynecological and Obstetrical Journal*, Dec., 1901) a few cases where I had employed this method successfully. I have continued to do the same incision occasionally: a number of publications have been made on the subject in America as well as abroad, and I think the standing of this incision is now well established. It is immaterial whether the original division is done; transverse cutting down to the aponeurosis and splitting the aponeurosis in the usual longitudinal way, or whether Pfannenstiel's method is chosen: this author advises dividing also the aponeurosis transversely. I have adhered to the original plan of Küstner thus far. It is necessary to select a minority of proper cases for the application of this technique: its usefulness is limited. The attempt

would be foolish to perform every abdominal section in this way, but for smaller tumors and minor affections of all descriptions of the uterus as well as of the adnexa, it is very well applicable: the advantage of the ordinary abdominal section, manipulation under control of the eye, is maintained.

The next point which in my opinion is fully established, is that Alexander's operation is the best surgical mode for treatment of displacement of the uterus. As I have expressed myself in the paper first mentioned, ventrofixation of the uterus is absolutely to be condemned and should be entirely abandoned. I do not intend to discuss this subject to-night; I have given my view and the reasons therefor in the same paper. Vaginal fixation, if performed as a true vaginal fixation, has been demonstrated as unquestionably dangerous in parous women; but in non-parous women it holds high rank, especially as an adjunct in operations for prolapse. Modifications of the true vaginal fixation, such as vesico-fixation, have not given full satisfaction; they have been found time and again to be rather unreliable as far as final anatomical results are concerned.

Shortening of the round ligaments inside the abdomen, performed after one of the extremely numerous methods, either after abdominal section proper or after anterior colpotomy, is subject to failure since in all these cases the weakest part of the ligament is not strengthened. Goldspohn, of Chicago, called attention to this matter years ago. When we perform the Alexander operation we see that outside the inguinal canal and at the outer end of the inguinal canal the ligament is thin and frail, but the higher up, the nearer the uterus we come, the stronger and more powerful the ligament is found. That weak part then on the outside of the canal is not made any stronger if the thick, strong part next to the uterus is doubled on itself or sutured to the uterus, etc. The weak point in the canal remains weak, the danger exists that stretching of the ligament will take place with consequent displacement of the uterus.

The object of shortening the round ligament is to do away with the weakest part of it; this is done through the Alquié-Adams-Alexander operation.

Incidentally I want to say that it must be the aim of every operator to find and pull out the ligaments without opening the inguinal canal, least to split open the whole length of the canal, as is recommended and practiced by not a few as a matter of routine: the incision through the skin should be as small as possible.

A vast amount of publications has been made in these last 10 to 15 years about the merits of the Alexander operation. Based upon the knowledge of a great many of those and upon an extended personal experience with the operation, my opinion is that inguinal shortening of the round ligaments for the radical cure of retrodisplaced uteri is an absolutely safe operation as far as immediate result is concerned; that it is an eminently sure operation as far as final results are concerned; the uterus remains in perfectly physiologic condition, no fixating adhesions interfere either with the health of the bearer or with the process of a possible gestation. My opinion is strong in this matter; it does not appear fair and just to draw a different conclusion from the large amount of evidence at our disposal if the same is viewed and judged in an unbiased mood.

Shortening of the round ligaments was first done for the cure of movable retroflexed uteri; but the scope of its application was soon extended to fixed retroflexions. By breaking up the adhesions through an opening into Douglas' cul-de-sac the fixed retroflexion was rendered movable. Either immediately or at a later séance the now movable uterus was secured in normal position through inguinal shortening of the round ligaments. But this procedure does not prove quite satisfying in either case: to put a patient twice under an anesthetic should be avoided if possible: on the other side, to insure a good final result it is necessary to apply a pessary immediately after operation and to have it worn for a few months; if vaginal section has to be done it becomes impracticable to apply a pessary.

If we keep this in mind, if we know that breaking up the adhesions through the cul-de-sac is more or less working in the dark, if we furthermore see the clear and easy exposition to view of the field of operation in supra-pubic abdominal section, then we can easily understand why ventral operations for the cure of retroflexed uteri, movable and fixed, have become such great favorites with surgeons all through the world.

In order to avail himself of certain advantages of ventrofixation and at the same time to shorten the round ligaments in the inguinal canal, Goldspohn recommends and practices splitting of the inguinal canal, entering the abdominal cavity through the same. He thus performs an abdominal section over both inguinal canals, breaks up adhesions, performs operations upon the adnexa and in closing the inguinal incisions shortens the round ligaments.

There is a distinct objection to this ingenious procedure found

in the fact that instead of *one, two* abdominal sections are made. It does not matter how small an abdominal incision is made, nor how carefully it is closed: the possibility of a hernia exists: if we can get along with *one* incision, then by all means let us do so and not make a second!

From all that I have said I feel justified in drawing the following conclusions:

1. Shortening of the round ligaments through the inguinal canal is the most satisfactory operation for the radical cure of retrodisplaced uteri, movable or fixed.

2. To free a fixed and displaced uterus, to perform conservative operations upon the same or the adnexa or to remove smaller tumors and moderately enlarged adnexa, a supra-pubic abdominal section will in most cases prove very gratifying: Küstner's transversal division of the skin can be made use of in these cases with great advantage.

3. In suitable cases from the same transversal incision (Küstner's) the abdominal cavity may be entered and the round ligaments may be shortened outside the inguinal canal.

Before closing my paper I want to call attention to a paper by E. Casati in Rome, published in *Raccoglitore med.*, 1887, No. 5 to 8; reported in *Centralblatt für Gynakologie*, 1888, No. 26, page 432. Casati recommends a transverse cut from the opening of the inguinal canal of one side to the other, slightly curved through the skin, for the performance of Alexander's operation. The ligaments are cut, tied and stitched upon the aponeurosis across the abdomen.

1018 SUTTER STREET.

THE TREATMENT OF POST-OPERATIVE PERITONITIS.¹

BY

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"AN ounce of prevention is worth a pound of cure" is an old adage peculiarly applicable to the topic assigned to me for discussion. In short, the initial treatment of post-operative peritonitis is summed up in the word—*prophylaxis*. It must be borne in mind, by those who take part in the discussion, that I am speaking strictly about instances of peritonitis which develop after operation, and that I am not at all concerned with instances where peritonitis exists before operation. This proviso is requisite in order to forestall those who may wish to enter the discussion irrespective of its limitations.

The prophylactic treatment of peritonitis consists in attention to the following points: Absolute asepsis of all in the operating room; of the instruments and other appliances necessary for the performance of the operation: the avoidance of germicides—such as bichloride, during the operation: the handling of intestine and the exposure of omentum as little as possible during the operation: the covering of raw surfaces with peritoneal flaps as far as is possible, and, where this is impossible, the protection of such surfaces by sterile gauze which is thence carried into the vagina. Furthermore, in any case where we are going to operate in the presence of pus, or, where from the nature of the case we have reason to think that pus may form, the administration at least three hours before operation of ten grains of calomel combined with twenty grains of bicarbonate of soda, with the end in view of providing for catharsis after operation, thus avoiding, in the presence of an irritable stomach, futile attempts at administration of the like afterwards. Such precautions having been taken, if peritonitis nevertheless develops, I am in the habit of differentiating three types: the *paretic* or *pseudo-peritonitic*; the *inflammatory*; the *septic*. The treatment of these types, which I have

¹Being a portion of the discussion on the treatment of peritonitis, read before the Section on Obstetrics and Gynecology of the New York Academy of Medicine, March 24, 1904.

evolved from my experience in hospital and in private practice, is the object of the remarks which I make to-night.

Not infrequently, after abdominal section, the belly becomes gradually tympanitic, the stomach rejects, not alone nourishment, but also drugs, the pulse and the temperature are slightly elevated and the operator is in despair. To judge from my consulting experience, the average man proceeds to dose his patient with calomel and to give salts or phosphate of soda—which very naturally are promptly rejected by the stomach, and the distention continues until the action of the diaphragm is interfered with and the patient dies. Such, in a few words, is the clinical history of a number of cases which I have seen in consultation and which have died because of the multiplicity of drugs administered to move bowels which were simply *paretic*, whereas a little more consideration and a little less ardor would have resulted in the substitution of one drug for the many and in all probability the recovery of the patient. This is the type of peritonitis to which I would apply the term *spastic*, or *paretic*. I am viewing this topic purely from the standpoint of the clinician, irrespective of laboratory finding or of bacteriological hypothesis. All I know is, that without thinking of germ or of supposititious toxin, cases of this type in my hands have yielded kindly to the administration of a drug whose function it is to relax *spasm*. Had they died my certificate would have been labelled peritonitis. When I see such instances I order either atropin or the hydrobromate of hyoscin, in full doses, hypodermatically to the physiological extent, with the result that the *spasm* of the bowel relaxes and the patient proceeds through an uninterrupted convalescence. It is only fair that I give the credit for this therapeutic suggestion to Dr. C. J. Mooney, of this city. So much for the first type of post-operative peritonitis which I recognize from the standpoint of my clinical experience.

The next type I call *inflammatory*. And here, again, I speak from the standpoint of the clinician. In making this statement, for the second time, I would not have you think that I at all decry the knowledge acquired through laboratory research or through the investigations of the bacteriologists. Far from it. To both I owe a debt of deep gratitude. Nevertheless, in the convalescent room I must of necessity face conditions as they present themselves to me, and it is from this point of view that I am speaking to you to-night. Within three to four days after, let us say, an aseptic abdominal section, the temperature begins.

to rise and the pulse and the respiration concomitantly. And this is the vital point! Furthermore, the bowels may or may not respond or the stomach is intolerant to both food and to medication. Here, happy should be the operator who has taken *old time* by the forelock and administered his calomel before operation! Under these conditions we have to differentiate a general from a pelvic peritonitis, and he is the wise man who thinks a trifle and hesitates before he resorts to desperate remedies—such as repeated doses of calomel and of salts and of phosphate of soda and of enemata. On consideration, it will be apparent that we are here dealing with an inflammatory condition of the peritoneum, and, therefore, that that which this organ needs in order that the subject may recover, is not the *spur* but the *rest*. The stomach is intolerant, therefore why try to cause it to retain a drug the very thought of which is noxious? Put the ice-bag on the abdomen to allay undue temperature rise, wash out the stomach to endeavor to establish gastric tolerance for food, feed by rectum—in memory of the fact that the patient may be kept alive thus for days, and treat the inflamed peritoneal surfaces as you would a fractured leg—that is to say, give it *rest*. One of the most feasible means, and withal least deleterious under such circumstances, is that taught me over twenty-five years ago by Fordyce Barker of blessed memory—the free exhibition of codein. This drug neither paralyzes peristalsis nor upsets the stomach, and therefore it is peculiarly applicable to the peritonitis under consideration. Beyond this, watch the case carefully, and should pus form locally or in the pelvis—attack it under the well recognized surgical rules.

The next type of peritonitis which I recognize is the *septic*, and here again, happy the operator who has calomel in the stomach of his patient before operation! I use this term *septic* generically, irrespective of bacteriological finding, for the reason that again I am facing my patient in the sick room where, up to date, the bacteriologist affords me no definite help in reference to the exact germ or toxin I am dealing with. Could he do so, and he may in the near future, my therapeutic pathway would be much easier.

This form of peritonitis is characterized by *rapid* pulse and *rapid* respiration and *low* temperature. The belly may or may not be tympanitic. The most desperate cases of this type which I have seen have had a flat belly and yet it has been full of pus. The stomach is apt to be intolerant, wherefore my statement,

happy the man who has the calomel in his patient before operation! The bowels in this type of peritonitis are apt to be loose, however, but the kidneys are inclined to be torpid. We are dealing with a deep *toxemia*, not *localized* but *generalized*, and it is on this basis that, at the present, we must treat the case. Since the infection is of a mixed type no wonder the anti-streptococcus serum or the Credé ointment fails us. The best we can do is to institute a *sustaining* treatment in the hope that thus Nature may be enabled to throw off the toxins or the products of the toxins, and along this line I suggest the following: *Tone up the heart action* by means of alcohol and of strychnin; where the kidneys are inefficient, use *digitalis*: throw plenty of salt into the circulation—either by the veins, or by rectum or through the medium of the skin—this under the hypothetical view that we are thus diluting the toxins. Should pus foci form either in the pelvis or in the abdomen, open them according to surgical rule. It is possible—indeed I will go further and say that it is certain, that before very long we shall isolate a toxin or devise a method which will strike at this type of peritonitis at the very root; but at the present day it must be admitted by every candid operator that when this type develops the result is well-nigh a foregone conclusion. The injection of germicides, such as formalin into the veins, the insinuation, through posterior section, of iodine into the system; these and other methods have yielded us no better results than have the sustaining methods on which I have laid chief stress. Indeed, in regard to local septic peritonitis, I could readily show as good results from the opening of the cul-de-sac and the inpacking of sterile gauze (*plain*) as those recently heralded from the use of a specially prepared iodoform gauze—the use of which, from my standpoint, benefits one only and this the manufacturer. *Plain gauze is as good.*

Although I have spoken freely and frankly to this subject—even as your Chairman knew I would do when he invited me—I would have you believe that it has been in no dogmatic spirit. I have simply outlined to you my individual views, derived from no inconsiderable experience, in the full knowledge that they are probably at variance with those held by many others and yet in the spirit of one who is ever searching after the truth.

116 WEST 76TH STREET.

THE TREATMENT OF GONORRHEAL PERITONITIS IN
FEMALES—YOUNG AND OLDER.¹

BY

A. ERNEST GALLANT, M.D.,
New York.

THE *Gonococcus* Neisser, like "the poor, we have always with us," and pass it along in an endless chain, gratuitously, at times innocently, more often in the full consciousness of its malign influence on the recipient.

The *Micrococcus gonorrhoeica* is differentiated by its biscuit shape, gelatin indigestion, inhospitality to Gram's stain, slow growth on blood serum, resistance to its own toxins, latency, and avidity for virgin soil, regardless of age, time or environment.

Though lacking in auto-locomotion, by the aid of the *genus homo*, directly or indirectly, it secures access to the vagina and thence by virtue of its own rotatory and oscillatory powers, if not forcibly curbed, cribbed and cabined, it will, sooner or later march onward and upward, not content with nesting in the uterine follicles, enters the Fallopian tubes, and with ciliary assistance finally invades the peritoneal cavity. Would to heaven the devastation stopped at this point. Fortunately our Chairman, Joshua-like, has commanded us at this point to stand still and carefully consider the means for the salvation of the unfortunate woman. This we endeavor to accomplish by: (1) Timely education; (2) timely eradication; (3) timely enucleation.

TIMELY EDUCATION.

As a profession it is our inalienable duty to (a) teach the prospective bride to beware of the infected lover; (b) to teach the prospective husband, beware the old infection; (c) to teach the prospective mother, beware infecting her prospective child; (d) to insist that parents early teach their sons, beware the wiles of the demimonde; (e) to teach their daughters beware the seductive libertine; and (f) with shame be it said, teach husbands that

¹Being a part of the discussion on "Peritonitis," before the Section on Obstetrics and Gynecology, New York Academy of Medicine, March 24, 1904.

the unfitness of the wife during menstruation, pregnancy, and the puerperium is not and never ought to be looked upon as an excuse for him to deviate from virtue's pathway; and last but not least, teach father, mother, son and daughter that but few ever enter the road to infection when not incited thereto by the stimulus of the "cup that cheers" and often inoculates.

TIMELY ERADICATION.

Gonorrhea is met with in the female within a few days after birth, e'en down to old age. According to Janet, in little girls the more frequent sites are the vulva and labia vaginæ, more rarely the urethra and rectum and exceptionally to uterus.

Gonorrhea in Children.—According to Abt (*Year-Book Surgery*, 1900, 170): "Weak and rickety children are not particularly susceptible; in fact, the victims are, as a rule, strong and well nourished. The perineum and inner surface of the thighs are usually eczematous and covered with dried, greenish-yellow pus. The labia major stick together. The mucous membrane of the vestibule is red and swollen, and so is the hymen, and considerable pus is observed. In most cases the urethra is involved, and in some cases the ducts of Bartholin's glands. If the perineum is pressed upon, pus will exude from the vagina. The inguinal glands may be enlarged, especially if there is eczema or excoriation. There may be slight fever, but, as a rule, the temperature is normal. There may be itching, pain on micturition, or vesical tenesmus. The disease may persist for weeks or even months. The uterus is never involved. The tubes, ovaries and peritoneum may be involved. Infection may take place in a bath from infected bath-water, soap or towels. The infection may also be conveyed by sponges, bedlinen, unclean fingers, clinical thermometers, or rarely, by criminal assaults. The disease is occasionally, though very rarely, seen in the new-born. The prognosis in little girls is good, and the disease usually terminates within three months."

The first and youngest case was seen by the writer in 1891, when a woman and her six weeks old child were admitted to the St. Joseph's Hospital, Paterson, N. J., the former complaining of abdominal pain, dysuria, and vaginal discharge coming on after the birth of the child, since the resumption of marital relations. The crying and fretful condition of the baby led to the discovery of vulva excoriation and a yellow vaginal discharge ap-

parently involving the urethra, as shown by the crying during micturition.

At Roosevelt Hospital Dispensary, the writer during the past 11 years has seen from 3 to 5 cases annually, in children between 2 and 14 years, who have been brought there because of pain on urination, vulva irritation, and vaginal secretion. In one instance we traced the history and learned that an adult woman had seduced a boy of 14 years, he had conveyed the infection to the girls of 10 and 13, and one of the girls by manipulation to a baby of $2\frac{1}{2}$ years.

In children old enough to differentiate the seat of pain one can usually elicit abdominal pain as compared with painful urination; but as infants resist when the abdomen is palpated, one cannot be sure that peritonitis is present.

In the treatment of these children we irrigate the vagina with warm boric acid solution, and inject with the same "P" syringe half an ounce of one per cent. silver nitrate solution, repeating this process every third day; apply a 10 per cent. boric acid ointment twice daily to the vulva, and administer internally an alkaline diluent with copious draughts of water. After a few applications these patients are much better and fail to return, but can we say that the disease has been eradicated? Will not the girl at puberty show the effects of her early infection?

In females after puberty, the most important indication is to *arrest* the disease and *limit* it to the vagina and urethra, ere the gonococcus finds its way into the cervix and uterus, Fallopian tubes and peritoneal cavity.

The drugs which have rendered most efficient service are silver-nitrate and ichthyol. The former in solution grs. xxx to the ounce, applied thoroughly to the dilated urethra and the whole vagina; or pure ichthyol on an applicator, or tampon, and repeated every three or four days. The tampon, during the active secretion, to be removed in 24 hours, and an 1-2,000 permanganate potassa douche, morning and night, during the interim. Internally an alkaline mixture, every two hours in a glassful (6 oz.) of water: \mathcal{R} Potassi acetatis, Potassi bicarbonate, Potassi citratis aa gr. v, Extract Pichi fluid, M. xxx, Aquæ $\frac{1}{2}$ oz.

During the past few years we have refrained from introducing the sound or any instrument carrying a drug into the cervix, as we deem it next to impossible to do so without conveying the gonococci higher up and thereby infect the uterus, a calamity much to be feared and dreaded. With Neisser we firmly believe

that once the gonococcus invades the uterine mucosa there is but little chance of medical treatment availing (*Med. News*, 1900, LXXVI, 41). When the active stage has passed, and dysmenorrhea, menorrhagia, metrorrhagia, and sterility demand interference the use of the curette may be justifiable, but one must not lose sight of the danger of stirring up the enemy, and facilitating his entrance into the tubes and peritoneum.

When the gonococcus invades the peritoneal cavity, it will soon make itself felt, and incite pelvic and abdominal pain, increased temperature and pulse, compel the patient to go to bed, readily submit to hot or cold applications, cathartics, and often demand opiates.

Vaginal Cooler.—The gonococcus does not grow at a temperature below 79° F., or above 100.4° F., and at 113° F. its virulence and reproductive powers are destroyed. It has occurred to me that we might take advantage of these facts and make use of an apparatus suggested by Stroynowski (*Centralblatt für Gynäkologie*, Dec. 13, 1902) for the local application of cold to the female pelvis, by a continuous current of hot or cold water within the vagina.

As much of the usefulness of an instrument depends upon its simplicity and accessibility I would like to present such an apparatus which can be put together by anyone. It consists of a small rubber bag (Barnes, McLeans, Voorhees, etc.) into the stem of which is inserted a double current catheter, to the ends of which are connected two rubber tubes, one to be carried into a pail of ice water elevated above the bed, the other to convey the water to another receptacle on the floor. By connecting the *outlet* tube with the catheter inlet, the outflow will be less than the inflow and the weight of water from above will distend the bag and the vagina. The outflow can be still further limited by a clamp or string, thus controlling the temperature of the water in the vagina. The author has had no opportunity to make use of this device, but believes it worthy of trial in suitable cases.

TIMELY ENUCLEATION.

In a majority of active gonorrheal infections, uterine, tubal or peritoneal, one would hesitate to bring into play either the curette or the vaginal or abdominal incision, until after the acute symptoms subside, and then only if the general health suffer or the local symptoms persist to such a degree as to disturb her menstrual, marital, or maternal functions.

On the other hand, the following case illustrates some of the difficulties which prevent us from adhering to any hard and fast rules:

CASE I. *Gonorrheal Peritonitis vs. Appendicitis*—Feb. 10, 1902, J. R., a patient of Dr. J. R. Latham, was brought to the writer for operation for removal of a diseased appendix, having been suffering all the usual symptoms for the past three days. Examination showed a mass in the right iliac fossa, with tenderness over that point. Pelvic examination showed nothing except that the tube on the right side was placed near the brim.

Believing that the right tube was attached to the appendix, a median incision was made: the omentum was adherent to the parietes, the intestines markedly injected and bound together by fine bands. The caput coli was covered with a mass of exudate, partly filling the right fossa; the appendix, sickle shape, injected, adherent, hanging over the brim, but no signs of perforation or abscess. In the pelvis the tubes were found free, one of the fimbriæ on the right being attached to the appendix, with *free pus pouring from both tubes*, some of which had found its way to the right fossa and caused the formation of the mass of exudate at that point. Eight days later it was found necessary to open and abscess in the right fossa, and drain; after which she made a rapid recovery. Neither the patient nor her doctor knew that she was suffering from a recent gonorrheal infection.

The following history illustrates a too common form and course of gonorrhea, viz., early infection, exacerbations, metrorrhagia, pyosalpinx, tubo-ovarian abscess, ovarian cyst, appendicitis, peritonitis, operation, post-operative neurasthenia:

CASE II.—Miss E. H. was referred to the writer by Dr. T. T. Gaunt on Dec. 2, 1900; 30 years; menstruated at 18, regularly, 6-7 days.

For 10 years has suffered from a painful, throbbing sensation in the left pelvic region. During the past 5 years has flowed severely, lasting 10 to 14 days for past three years. Five years ago was "told by a Chicago physician that she had fibroids." Some months later was curetted by a New York doctor; no fibroids found. During the past four years has lost flesh, strength, and all color.

At present time (Dec., 1900) tired all time, poor appetite, constipated, bleeding piles; at times "queer nervous feeling," pain on exertion; dysuria; unable to attend to her duties as a typewriter.

Examination showed the large heavy uterus, fundus forward, to right of median line; both ovaries double size, very tender to touch. Advised ether examination, curettage or celiotomy as indications might direct.

May 9, 1901. Tells me she has been in bed during the past three weeks with "peritonitis." Temp. 102-103, pulse 120-130. Abdomen distended by a fluctuating mass on the left extending nearly to the umbilicus, uterus pushed over to the right pelvic wall. Operation refused. Feared to lose her ovaries and be unsexed. Hot abdominal applications, vaginal douches, sedatives, laxatives, naturally failed to allay the symptoms and she finally consented to operation. On May 14, median incision, moderate adhesions to anterior abdominal wall; thin walled cyst, emptied of 8 ounces of clear fluid; pelvic abscess evacuated of more than a quart of pus and sac torn out; right and left tubes thickened to one inch in diameter and elongated to six or seven inches, stretching over cyst and abscess, were removed with remnants of the broad ligament. The appendix lay curled at the pelvic brim; was separated from adherent intestines and stump sutured over. A gauze drain was carried into the vagina. Tympanites necessitated abdominal massage. Vaginal drain removed the fourth day, and after a rather stormy convalescence she went home May 27, thirteen days after operation. Her health has greatly improved, but the nervous symptoms up to September, 1902, had not abated.

May, 1904.—General health much improved, "has only of late been reaping the benefit of operation."

AMERICAN GYNECOLOGICAL SOCIETY.

Proceedings of the Twenty-ninth Annual Meeting, Held in Boston, May 24, 25 and 26, 1904.

FIRST DAY, MORNING SESSION.

The President, DR. EDWARD REYNOLDS, in the Chair.

An Address of Welcome was delivered by Dr. Charles M. Green, of Boston, which was responded to by Dr. Henry T. Byford, of Chicago.

The first paper read was by Dr. John G. Clark, of Philadelphia, Pa., entitled

THE TREATMENT OF GALL-STONES FOUND AS A COINCIDENCE IN
ABDOMINAL OR PELVIC OPERATIONS.

DR. CLARK stated that among the unsettled questions in abdominal surgery the treatment of gall-stones found as a coincidence in abdominal or pelvic operations might be considered a debatable one. He followed the plan at present of removing gall-stones which were found in the course of another operation, if the patient's condition permitted of this extra operation.

Although it was stated that 95 per cent. of gall-stones produced no symptoms, he believed that this statement, which was drawn from pathological and dissecting-room records, should not be applied to cases as one met them at the time of an operation. In his review of recent literature he had been especially impressed with the fact that our knowledge of the early stages of cholelithiasis was very indefinite, and that many cases which came to operation for more or less urgent symptoms did not have the clinical symptoms of colic and jaundice, as usually taught in our medical schools. In view of this hiatus in the early history of this disease, he believed that many symptoms now attributed to gastralgia, indigestion, functional disturbances of the gastro-intestinal tract, etc., would, as our knowledge increased, be ascribed to the presence of gall-stones with associated infection, which was so frequently found in cholelithiasis. In referring to the etiology of gall-stones, he said that three facts had been prominently established: (1) That the bile, as formerly believed, was not bactericidal; (2) that the microorganisms in the gall-bladder were predisposing, if not absolutely causative, factors in the formation of gall-stones; (3) when gall-stones were present in the gall-bladder, infection in that viscus was much more likely to take place. In view of the fact that stagnating vital fluids around

a foreign body were always conducive to infection, he believed that even the usually innocuous colon bacillus, if present in the gall-bladder under these conditions, must give rise to symptoms of toxemia which may have an expression in other ways than mere colic or jaundice.

He quoted Musser, who believes that we are just entering a new era of gall-stone surgery, and that many secondary conditions which now result from delay in operating for gall-stones will not occur if the proper surgical treatment is applied earlier.

In almost all cases of cholelithiasis which came to operation bacteria were discovered. In the majority, the comparatively innocuous colon bacillus was found, which he believed under certain conditions was capable of elaborating very depressing toxins, and sustaining this statement with reference to old pelvic abscesses, in which only the colon bacillus was found, and yet as the result of the toxemia the patient was thrown into the most wretched constitutional state.

Even if the gall-stones were dormant, the patient was constantly in more or less danger, for there were three general avenues through which infection might enter the gall-bladder: (1) From bacteria circulating in the general blood stream and reaching the liver through the hepatic veins; (2) by the direct passage of bacteria into the common bile duct from the duodenum; (3) by the transportation of bacteria from the intestine through the portal circulation. The point, therefore, which he especially dwelt upon was that the gall-bladder, which contained calculi, was a point of decided decreased resistance, and was frequently the source of an infection. Therefore, although clinical symptoms of gall-stones might not be present, one dared not assume that a general deleterious impression was not being made upon the patient's health.

He then recurred to the frequently quoted statement that 95 per cent. of gall-stones did not produce symptoms, and showed from his own series of cases that in at least 5 per cent. there were varying symptoms from undoubted attacks of colic and jaundice to less pronounced gastro-intestinal symptoms. He quoted Dock's statement that more had been learned from the surgeon than from the pathologist in these cases, and claimed that if the abdominal surgeon would go very fully into the history of his cases and then check these histories by careful examination of the other organs of the abdominal cavity, a valuable link in the chain of cholelithiasis might be established. In order to justify the operative intervention in cases which were not producing well-defined symptoms, the mortality as well as the morbidity should be a very low one.

In his own experience no death had occurred, nor had there been any serious complication referable to the secondary operation. Further, he quoted the statistics of Kehr, Mayo, and Mayo Robson in simple cholecystotomy, where the operation had been done because marked symptoms were present. In a large series of cases

in all three of these surgeons' hands the mortality had been less than two per cent. In view of the fact, therefore, that the additional operation did not seriously jeopardize the life of the patient, and also because he had seen two patients die from cholelithiasis a year or more subsequent to an abdominal operation, in which, had the routine exploration been made, the gall-stones might have been easily removed, he believed that the best interests of the patient would be conserved if the gall-stones were removed as a secondary part of another operation, in the event of their being found. However, he did not by any means lay this down as a fixed surgical rule, which was subject to no deviation, for he very positively pointed out the dangers of prolonging the operation if the patient was in a critical condition or of searching about the abdomen if there was a serious suppurative disease of the pelvis. He believed that ordinary surgical sense would dictate when it was not safe to carry out this plan.

He appended the history of twelve cases to his paper, in which the various operative points, as well as the significant facts in symptomatology, were elaborated.

DR. R. STANSBURY SUTTON, of Pittsburg, said that gall-stones did not always produce symptoms which justified resort to operation. If they were encountered during the course of another operation, he thought they had better be removed.

DR. GEORGE H. EDEBOHLS, of New York, had occasion at one time to operate on a woman who presented marked dyspeptic symptoms. In addition, she had movable kidney, chronic appendicitis, and induration in the region of the gall-bladder. He anchored the kidney, removed the appendix through a lumbar incision, pulled the gall-bladder into the lumbar wound, and found a stone about four or five centimeters in length, pear-shaped, and nearly filling the gall-bladder. The attending physician was positive that the gall-bladder did not produce symptoms of stone in it. He would not let the speaker remove the stone from the gall-bladder. A year later he opened the woman's abdomen for some other condition, making an incision near the gall-bladder. He investigated the gall-bladder, and found it was perfectly healthy, and that the large stone formerly present had either passed or had been dissolved. The treatment after the previous operation consisted of the use of olive oil for about a month, and whether this had anything to do in causing the passage of the stone he did not know. At any rate, the stone had disappeared and had left no trace of its former existence.

DR. A. PALMER DUDLEY, of New York, emphasized the point of looking beyond the gall-bladder. He believed that stones were formed in the liver ducts, and that by means of a stagnant circulation cholesterine nuclei formed, and that only a small proportion of the stones were found in the gall-bladder. He would not hesitate to go into the center of the liver; in fact, in the last case that came under his observation, in which a diagnosis of gall-stones had been made by a medical confrère, he boldly went

into the gall-bladder, but found no stone. He found, however, the duct dilated. He explored the right lobe of the liver, to the extent of five inches, with his finger, and then packed the liver full with iodoform gauze, put an apron of gauze over it, and the patient was well to-day. He would not hesitate to explore the center of the liver in searching for such deposits, as he believed we could do liver surgery which was not as yet dreamed of.

DR. BROOKS H. WELLS, of New York, stated that in the last three years he had used practically the same measures as those that had been referred to by the essayist. A number of patients coming under his observation had complained of obscure symptoms of so-called functional indigestion, etc. In these he had found either disease of the gall-bladder, an over-distended gall-bladder from obstruction elsewhere, or trouble referable to gall-stones. By making a small or large incision, as the case indicated, exposing the bile passages, clearing out the gall-bladder, and draining it, the patients had obtained remarkable relief from the symptoms that were supposed to be due to functional indigestion. He believed that a routine examination should be made of the entire contents of the abdomen whenever this could be done without seriously imperiling the patient's recovery, and this could be done in the great majority of cases.

DR. SETH C. GORDON, of Portland, Maine, said that when the abdominal cavity was opened for other purposes, and he was quite sure the patient could stand it, he would examine the gall-bladder thoroughly, and if gall-stones were found he would remove them. He cited cases in support of this argument.

DR. HIRAM N. VINEBERG, of New York, said that under the influence of the teaching of Kelly he had been in the habit of doing what had been advocated by the essayist, but after hearing a discussion on gall-stones in the common duct and in the gall-bladder by one of the Mayos, he had changed his method. Mayo, he said, had criticized gynecologists for opening the gall-bladder simply because it contained gall-stones, and unless there were symptoms and indications sufficient to warrant operation, it should not be done. Simply opening the gall-bladder and removing stones did not effect a cure, as proven by three or four cases that occurred in the author's own practice. On the other hand, if the gall-bladder was diseased, it should be removed.

DR. J. M. BALDY, of Philadelphia, said that gall-stones existed in the gall-bladder without causing any material discomfort for years, but that when infection occurred trouble ensued. There was not the slightest doubt in his mind but what large numbers of cases of so-called stomach trouble or chronic indigestion sooner or later proved to be cases of gall-stones, or of gall-bladder disease.

With reference to removing gall-stones when operating for some other intraabdominal condition, the surgeon should consider the physical condition of the patient, the surroundings, etc., and as to whether the patient was willing to undergo the additional

risk of a second incision for a gall-bladder operation. If he found the patient had gall-stones, which he did not recognize until he had opened the abdomen for some other condition, and her physical condition, indications, etc., warranted it, he would remove them. The more he saw and read, however, of the experience of men in regard to gall-stones and the removal of the gall-bladder, the more he thought the picture was largely overdrawn, and that drainage in many cases would enable a number of patients to recuperate and get into a comparatively healthy condition. Removal of the gall-bladder was not such a simple procedure as it had been pointed out to be.

DR. WALTER P. MANTON, of Detroit, Mich., quoted Ochsner as saying that he (Ochsner) had tried almost everything for the so-called cases of chronic dyspepsia, without affording them relief, yet after opening their gall-bladders and removing the gall-stones which were found, the patients were cured.

Dr. Manton has seen a number of such cases and contended that the removal of gall-stones or the gall-bladder, if diseased, was the thing to do.

He disagreed with the essayist with regard to suturing the gall-bladder after incision and dropping it back into the abdominal cavity. He had tried this in several cases in connection with operations on the abdominal organs, and had found it unsatisfactory, as some of the patients died as the result of leakage.

With reference to Dr. Sutton's remarks, he did not believe there was any solvent ever invented which would dissolve gall-stones. He had had patients with gall-stones who had taken olive oil for years without relief and subsequently he had to remove the gall-stones.

DR. BEVERLY MACMONAGLE, of San Francisco, California, said that when the abdomen was opened for some pelvic or abdominal trouble, the surgeon should investigate the gall-bladder. If gall-stones had been making the patient ill, causing dyspepsia, or if there were adhesions around the gall-bladder, he should operate for gall-stones. The conditions that arise in the pancreas as a consequence of gall-bladder disease and of gall-stones were serious, and if the surgeon could do something of a prophylactic nature, without adding to the risk of the patient's life, it was a wise thing to do.

In reference to the operation, he thought it was bad policy for any surgeon to be guided by the counsel of any man who was not present at the operation. Suggestions as to details of the operation to be performed were known only to the gentleman who saw the case at the time, and his judgment was better than the combined judgment of those who were away from the case. Therefore, one should not restrict himself to any particular method of operating.

DR. CLARK, in closing the discussion, said that the formation of gall-stones through bacteria had been clearly demonstrated by a series of experiments.

As to the incision, whether large or small, this must be determined at the operation. He agreed with Dr. Baldy that the removal of the gall-bladder was a serious operation. He did not believe, however, that anyone would strongly advocate operation unless the gall-stones were producing symptoms and great discomfort.

DR. J. CLARENCE WEBSTER, of Chicago, read a paper on

OVARIAN PREGNANCY.¹

DR. J. WHITRIDGE WILLIAMS, of Baltimore, said there was no doubt that ovarian pregnancy occurred, but it was the rarest of all forms of extrauterine pregnancy. In regard to the Müllerian origin of ovarian pregnancy, as suggested by Dr. Webster, he was not quite convinced of it. While there was no doubt that Müllerian tissue might have been found in the ovary, as mentioned by Dr. Webster, and confirmed by numerous observers, he thought it was going too far to advance that view in explanation of every case of ovarian pregnancy.

DR. JOHN T. THOMPSON, of Portland, Maine, referred to a case of ovarian pregnancy he had reported at a previous meeting of the Society. He called attention to the nature of the structures in which pregnancy occurred, and to the frequency with which rupture might occur in the early days.

DR. EDWARD P. DAVIS, of Philadelphia, removed an ovarian pregnancy about a year ago, the histology of which had not been completely worked up as yet, although a diagnosis was made very early of the nature of the tumor from the enlarged ovary. The indications were that the pregnancy did not originate in a Graafian follicle.

DR. LAPHORN SMITH, of Montreal, had diagnosed ectopic pregnancy by the clinical symptoms, had operated, and found hematoma of the ovary. He had made the statement to students that he was satisfied that his diagnosis was wrong, because authorities had maintained that there was no such thing as ovarian pregnancy. But after hearing what had been said by the essayist, and by others in the discussion of the subject, he was convinced that there was such a thing. If the members who met with such cases would send ovaries to men like Dr. Webster for examination, he believed a number of them would be found to present evidences of ovarian pregnancy.

DR. J. WESLEY BOVÉE, of Washington, D. C., read a paper on

URETERO-LITHOTOMY.²

DR. B. BERNARD BROWNE, of Baltimore, mentioned a case he reported in 1875. He dilated the ureter of a woman and removed small hydatidiform growths from it.

DR. CHARLES P. NOBLE, of Philadelphia, said his experience with uretero-lithotomy was limited to two cases. In one the stone

¹See original article, page 28.

²See original article, page 45.

was situated near the orifice of the ureter. The ureter was slit open, the stone removed, and the patient made a good recovery.

In a second case the X-ray showed the stone to be located in the ureter about an inch below the brim of the pelvis. The stone was extracted by the extraperitoneal route, and the wound in the ureter sutured and drained. The patient recovered.

DR. WILLIS E. FORD, of Utica, N. Y., narrated a case illustrating the amount of damage which may be done to the ureter without very serious symptoms. Some six or seven years ago he operated through the bladder on a school-teacher, a woman, for the removal of a stone at the mouth of the ureter. The patient was already septic, although she had taught school up to within three or four weeks of the time of the operation. The stone was removed, but the woman died. At the autopsy he dissected out the kidney and found the ureter greatly dilated throughout its entire length, with sacculation of the pelvis of the kidney. There was no stone left, but simply a condition of septic kidney.

DR. BEVERLY MACMONAGLE, of San Francisco, California, said that since the advent and use of the X-ray three cases of stone in the ureter had come under his observation. In all three the most expert user of the X-ray failed to get any shadow of the stone. A diagnosis was made of stone in the kidney in one case by the scar or mark on the wax-tipped bougie which was passed into the ureter. The kidney was opened and stone was not found. But after passing the wound from the pelvis of the kidney through the ureter above, he got the click of a stone. He then opened through the vagina, and with alligator forceps removed a small stone from the ureter. In the other two cases a diagnosis of stone was not made; but after ureteral catheterization and the use of the X-ray, he thought there was a stone present, and in five or six days after ureteral catheterization had been resorted to, small stones were passed in both cases.

DR. ROBERT L. DICKINSON, of Brooklyn, N. Y., spoke of the different routes for removing stones from the ureter.

DR. GEORGE M. EDEBOHLS, of New York, reported an instructive case which showed the fallacy of depending solely upon the X-ray for diagnosis, either in renal or ureteral calculi. He had operated on two patients in whom skiagraphs showed clearly renal calculus of large size, but in both he found a large collection of pus.

DR. BOVÉE, in closing the discussion, said he was glad that Dr. Edebohls had mentioned the unreliability of skiagraphy in some cases, because it coincided with his own views.

NEPHRECTOMY FOR PRIMARY TUBERCULOSIS OF THE KIDNEY, WITH REPORT OF FOUR CASES.

DR. HIRAM N. VINEBERG, of New York City, in a paper with this title, said that tuberculosis of the kidney, both primary and secondary, was more frequently met with in women than in men in the proportion of about two to one. Different from what

occurred in men, renal tuberculosis in women was rarely associated with tuberculosis of the genital organs. A cystitis in women that resisted the topical applications of the silver nitrate solution by the Kelly method, should be looked upon with marked suspicion as being of a tuberculous character, even though repeated examinations of the urine should show an absence of the tubercle bacillus. The differential diagnosis of a non-tubercular from a tubercular cystitis with the aid of the cystoscope was not as reliable as the therapeutic test outlined in the preceding sentence. Pronounced reddening or ulceration about the mouth of one of the ureters, with absence of other bladder changes, was held by some authorities as pathognomonic of tuberculosis of the corresponding kidney; while the sign was an important one, too much weight should not be attached to it in women. In most cases the removal of the diseased kidney would bring about practically a cure of the descending cystitis. He doubted the wisdom of the advice to cure the cystitis before undertaking the removal of the kidney. In women, owing to the fact that the disease was most frequently primary and unilateral, the modern tests for determining the functional capacity of the second kidney were not as essential as in men. Catheterization of the supposedly healthy kidney was a procedure to be avoided, when, as was frequently the case, there was associated a tuberculosis of the bladder. The prognosis of nephrectomy in renal tuberculosis in women was exceedingly good. Of the writer's four cases operated upon, seven, five, two, and one and a half-years ago respectively, all were alive and in good health.

DR. JOSEPH E. JANVRIN, of New York, reported the case of a woman who had been ailing for two years with what was supposed to be a renal calculus. Before operating, Dr. Willy Meyer examined the woman, and agreed with the speaker that the case was probably one of the calculus in the pelvis of the kidney, with possibly calculi in the ureter. The kidney was removed, and it was found that its pelvis was infiltrated with tubercular deposit in the very early stage. The patient, however, made a good recovery, and was well to-day.

DR. J. WESLEY BOVÉE, of Washington, said that if one read the proceedings of the late German Congress, he would be impressed with the comparatively large proportion of cases in which primary tuberculosis was found in both kidneys, or the very small proportion in which one kidney alone was involved.

As to the indications for operation on tuberculosis of the kidney, the surgeon should be sure that the opposite kidney was capable of carrying on the function of excreting urine for the whole body before he decided to remove one tubercular kidney. Nephrotomy might be done, and the kidney most markedly diseased drained without taxing the other kidney to a great extent. There might occasionally be cases in which both kidneys were involved, and it was advisable to remove the more badly diseased organ.

As regards cystitis in tuberculosis of the kidney, it was a late, not an early, symptom.

DR. PHILANDER A. HARRIS, of Paterson, N. J., said that in cases of tuberculosis of the kidney it was difficult, where the bladder was corrugated and changed by the pathology present, to find the ureter, but by painting the entire field of the bladder with some solution sufficiently colored with a swab, as Prussian blue, he had succeeded in finding the ureters in the case of a girl, which he could not otherwise locate.

DR. SETH C. GORDON, of Portland, Me., operated on a man, removing a kidney which was situated low down in the abdomen, painful, and bound down by adhesions. The patient died eleven days after the operation, and post-mortem examination revealed that the man had no other kidney. Two years afterwards he removed a very large kidney from a woman, who lived twenty-eight days after operation. For twelve hours she did not have a single symptom of uremia, nor was a drop of urine secreted by the bladder, and she was in full possession of her faculties up to the time of death. Post-mortem examination revealed that she had no other kidney.

DR. GEORGE M. EDEBOHLS said that some four or five years ago he read a paper entitled "The Other Kidney, and Contemplated Nephrectomy." In it (this was before physicians were experts in ureteral catheterization) he advocated that, before removing the kidney, an incision should be made on the opposite side, to determine by actual inspection and palpation (1) the presence of another kidney; (2) its probable health; so far as could be determined macroscopically, before removing the diseased kidney. In spite of the advances made in diagnosis, and its limitations in diseases of the kidney, he had adhered to that rule in all nephrectomies performed since that time, and in one case he had saved the woman's life by so doing.

DR. J. RIDDLE GOFFE, of New York, reported a case bearing on the removal of the ureter in connection with a tuberculous kidney. The patient was operated on by him in 1896. She was a woman of 22 years of age, who had a very large tuberculous abscess of the right kidney. He removed the kidney, and about three inches of the ureter. She made an excellent recovery, with the exception that there was a sinus which lasted four months, and then healed. The patient was now a graduate nurse, and in perfect health.

DR. EDWARD REYNOLDS, of Boston, gave his experience of ten nephrectomies for tuberculosis of the kidney, seven of them being complete nephro-ureterectomies, all successful, so far as operative mortality was concerned.

He was inclined to believe that operation gave a better prospect of health in well-established renal tuberculosis than purely hygienic care of the patient. Hygienic care and open air treatment were combined with the post-operative treatment. It was important to use the ureteral catheter before doing nephrectomy.

not only for the purpose of demonstrating the presence of a second kidney, but for ascertaining its functional capacity.

DR. VINEBERG, in closing the discussion, said with reference to the procedure advised by Dr. Edebohls of cutting down upon the second kidney, this could be done by a skillful and rapid operator, but he did not think it could be recommended for the majority of practitioners, who had only a case now and then, and whose experience was not great.

(To be continued.)

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

Meeting of April 15, 1904.

The President, EMIL RIES, M.D., in the Chair.

UTERUS BIPARTITUS CUM VAGINA SEPARATA.

DR. JOSEPH B. DE LEE.—I expected to show a woman to-night who is pregnant at term with twins. She came into my clinic at the Chicago Lying-in Hospital Dispensary, and the first thing that was strikingly visible was a pendulous abdomen. Further investigation revealed that the woman was pregnant with twins; that there was a distinct groove between the twins, this groove being much more distinct than that we read about as occurring with twins in a single uterus, and it made me suspect at once that there was a variation in the form of the uterus. It was easy to take one side of the uterus from the abdomen and rotate it three-quarters around the other side, and it was a simple matter to turn the whole organ around to bring the rear twin to the front. Vaginal examination showed a septate vagina with a cervix on each side of the septum. The finger could be easily inserted through the dilated os into the uterus, and the septum felt for an inch and a half up in the uterus. Taken together with the deep groove visible through the abdomen, which, if the woman was here, could be seen in any part of the room, the vaginal findings forced me to the conclusion that this is a case of uterus bipartitus cum vagina separata. The patient is at term, and I expect her to be in labor any day. Her pelvis is roomy and normal.

SPONDYLOLISTHESIS.

Some of you may remember the woman I brought here with a spondylolisthetic pelvis. At any rate, we thought it was such a pelvis at that time, and further investigation of the case makes me believe still more firmly that we have to deal with a real spondylolisthesis. In the discussion at that time someone said that in cases of spondylolisthesis there is no knuckle or gibbus over the

lower end of the spine. I was not positive of my ground at the time, so did not dispute that statement. But I believed there was such a knuckle present in such cases, and I have brought with me to-night some pictures from standard text-books to prove that assertion. If you compare these pictures with the photographs of the case, you will find that they correspond remarkably well.

I have little to add to the description of the case given at the previous meeting, and that is this: The gait of a woman with spondylolisthesis is described by Schauta in Müller's hand-book as characterized by a small tread, and a negative width between the feet and the relatively short distance between the various impressions of the feet, or short steps. I took this woman, painted her feet with red ink, and had her walk on a long strip of wall paper. Then I took the paper, hung it on the wall, and photographed it, and so I have a photograph of the woman's tread. You see the narrowness of the tread, one foot being planted in front of the other, which tallies with the description; also the faltering gait.

This photograph of the patient shows a marked gibbus or knuckle, which can be seen from the side plainly. Here is another picture in which the characteristic gibbus is shown much more clearly and plainly with the bony landmarks marked in red ink for reproduction.

The internal measurements of this woman show also a characteristic narrowing of the outlet; the distance between the tuberosities of the ischii is seven and a half centimeters plus the thickness of the fat, which is not more than three-quarters of a centimeter. The spines of the ischium are very much developed, owing to tension of the sacro-sciatic ligaments, and project sharply into the pelvis. The bifurcation of the aorta I could not feel in this case, but there were large vessels easily palpable by the tip of the finger, but they could not be followed up to the bifurcation. This woman may have a high bifurcation, and the spondylolisthesis could not bring it as low as it is in other cases of spondylolisthesis.

I present here skiagrams of the pelvis. If you hold the skiagram at a distance, you can see a narrowing in the transverse diameter of the pelvis, a narrowing of the outlet, and a narrowing of the pubic rami can be easily seen. The other skiagram, if held at a distance so as to get a stereoscopic effect, shows a tilting of the sacrum with the promontory forward and the end of it backward.

DR. KARL F. M. SANDBERG reported

A CASE OF SYNCYTIOMA MALIGNUM OPERATED FIVE YEARS AND EIGHT MONTHS AFTER LAST PREGNANCY. NO RECURRENCE FOUR MONTHS AFTER.

Mrs. M. L., age 50, Danish; housewife: entered the Tabitha Hospital, December 14, 1903, giving the following history: Both parents died of old age, father 84 and mother 80 years old. Ten brothers and sisters, eight of whom died in infancy from causes

unknown, one sister died in childbirth, one brother is living and well, age 58. No tuberculosis or cancer in her family.

Had measles and whooping cough as a child, not sick since. Menstruation always regular of nearly a week's duration and ordinary amount. Has had five children, the oldest is nineteen years and the youngest five years and eight months old. Labors not difficult. One miscarriage eleven years ago. No sickness or hemorrhage after any of the labors or the miscarriage. Not pregnant after birth of last child.

She nursed this for two years, during which time she did not menstruate, and for one year after this she did not menstruate. Then menstruation reappeared in an irregular way with intervals of two weeks, three weeks up to two months and of a week's duration, amount greater than usual and with pain in the back and the right side of the abdomen.

During the last fifteen months the menstrual pain has increased, also the quantity of blood lost and the length of the time, and between the periods any exertion would make her flow. Leucorrheal discharge of an offensive odor also made its appearance. During the last two months she has been flowing every day.

Last summer she consulted a midwife, who diagnosed her case as change of life and told her to take care of herself but not to do anything to stop the flow; afterwards she consulted a lady, who prescribed for her and ordered an abdominal supporter. Five days ago she consulted Dr. W. F. Jacobs, who found a tumor of the uterus, advised an operation and referred her to me. Examination at the hospital Dec. 14, 1903.

A lady of quite large frame but thin and anemic. There is a sanguino-purulent discharge from the vagina. A nodular tumor about the size of a hen's egg can be felt occupying the posterior vaginal wall about equal distance from the vulva and the uterus and with the long axis corresponding to the axis of the vagina; it is freely movable and covered with mucous membrane, that in places is more adherent to the tumor and of a darker color; these are the most prominent places; it is of a consistency that is neither hard nor soft but elastic. A sanguino-purulent discharge exudes from the uterine orifice; otherwise this appears normal. The body of the uterus is as large as a three or four months' pregnancy, extending upwards above the pelvic brim into the abdomen, lying against the posterior wall and over to the right side; it is of elastic consistency, nodular, tender and of limited mobility. Heart and lungs normal.

Operation Dec. 15, 1903. On opening the abdomen the uterus was seen lying over towards the left side and backwards and extending upwards over the pelvic brim; it was large, soft, nodular, of a dark angiomatous color, the nodules especially being of a dark color; its posterior surface was almost universally adherent to the parietal peritoneum, especially at the points of the nodules, where the tumor mass seemed to have perforated the coverings of the uterus and have grown into the parietal perito-

neum. The tumor did not seem to have affected the cervical part, it appeared perfectly normal. From the appearance I made the diagnosis of Deciduoma malignum, although I had never seen a case of it before. After ligating the ovarian arteries on both sides and dividing the broad ligament the uterus was dissected loose from above. This however caused so much hemorrhage that it was abandoned, and after dividing the left broad ligament, which was comparatively free, the left uterine artery was ligated, the cervix was cut through, the uterine artery on the right side was tied and the uterus was rolled up and loosened from below with only slight hemorrhage. After this the whole parietal peritoneum, where the uterus had been adherent, was dissected loose with as much of the cellular and adipose tissue underneath as possible and removed. This extended from the rectum and sigmoid flexure on the left side over to the right and up to the cecum. A conical part of the cervix was removed, leaving only a shell of this, which was approximated by sutures; the peritoneum was drawn together and stitched over the denuded surfaces and the abdomen closed. The condition of the patient did not seem to allow any more operating, so the vaginal tumor was left for the time. She rallied well from the operation and made a good recovery, her pulse not exceeding 122 and her temperature not raising above 100.4 degrees except once on the fifth day when it reached 102.4 degrees. Examination of the urine showed this to be normal. There was some bloody vaginal discharge, that gradually decreased; later on a sanguino-purulent discharge with offensive odor again made its appearance. On examination it was now found that the vaginal tumor in several places had caused necrosis of the mucosa and perforated this, and that the discharge came from these places; there was also some rise of the temperature again. The condition of the patient now seeming to warrant it on the 11th of January she was operated for the vaginal tumor. This being pulled down by two fingers hooked above it, a horseshoe-shaped incision was made around it with blunt scissors and it was dissected loose from the underlying tissue further and further up.

On reaching the upper part a very severe hemorrhage started coming from behind the tumor. The view of the bleeding points being entirely obstructed by this it was rapidly removed and the bleeding controlled first by compression and afterwards by a row of sutures that closed the incision. It was then seen that two arteries of about the size of the uterine had entered the upper part of the tumor coming down obliquely one from each side. She also recovered well from this second operation and went home on the 31st of January, 1904. The incision in the vagina had not quite healed, but was granulating in the upper half. There was a considerable amount of infiltration on the right side of the pelvis and it was feared that this was a recurrence of the growth.

March 7, 1904: Says she is improving nicely and feeling good, doing housework. Examination reveals a longitudinal scar in the

vagina to the left side, slightly nodular in the upper part. In the pelvis the infiltration on the right side has decreased considerably and there is no tenderness. A slight vaginal discharge. Weight 145 pounds.

April 11, 1904. Says she is feeling well in every respect and gaining in strength and weight, her weight now being 148 pounds; her knees still feel a little weak. She is doing the housework, including cooking and washing, for her family of seven persons. She sleeps well, has a good appetite and a good digestion. Her bowels move fairly regular, but require an occasional laxative. She caught a cold last week hanging out clothes, but is better now, although she still coughs a little. For the last three days the discharge has had some bad color. She looks well and hardy, has gained in flesh and color, her eyes are bright and her tongue clean. No nodules or swelling can be felt in the abdomen. To the right of the remnants of the cervix there is a firm nodule about the size of a hazel-nut; it is located close to the vagina, is hard, circumscribed, nonsensitive and quite freely movable. The remnants of the cervix look normal; the scar in the vagina is drawn more over to the left side and looks like a normal scar without any nodules or infiltration around it. There is a slight yellowish white discharge without any offensive odor.

The peculiarities of the case are:

1. The appearance of a syncytioma malignum three or more years after pregnancy, and
2. One or more years after the menopause.
3. Its slow development extending apparently over two years and eight months.
4. Its nonrecurrence either locally or metastatically for four months.
5. It being the first case of syncytioma malignum reported in Chicago.

ANGIOMA OF THE PLACENTA.

DR. EMIL RIES.—I have here a specimen, the first, I believe, of its kind demonstrated in America. It is a tumor of the placenta. There have been reports of tumors of the placenta to the number of forty-five or fifty in European literature, French, German, Austrian, Italian and Russian, but no case, so far as I know has been reported in America. Dr. De Lee will give you a history of the case.

On the fetal surface of the placenta you see a defect. The defect is covered on the other side by the membrane of the chorion. When I hold the placenta to the light, you can see there is nothing left but chorion and amnion. Examination of the specimen shows that it is a lobulated tumor, rather solid and firm to the touch. It is one of those tumors which are usually found in the placenta. It is an angioma of the placenta. Angiomas of the placenta vary to a certain extent in structure. There may be more or less rudimentary vessels, there may be more or less

of the connective tissue of the chorion left, or it may be more or less compressed. I have here two sections from two different places of this tumor, one showing more of the structure of the capillary angioma, and the other showing more the structure of endothelioma, where the endothelial cells of the chorion have grown to a considerable extent and formed almost a solid tumor in which the capillary lumina are comparatively rare. These variations are found in the same tumor in many cases; the extent of the growth of the endothelial cells is so great that in some instances these tumors have been diagnosed as sarcoma. Two such instances have been reported by Hyrtl. Where the connective tissue of the chorion is more developed, the cases have been diagnosed as myxofibroma or fibroangioma of the placenta. But these are only variations in the extent of the growth, or compression of the various tissues.

It is worthy of note that these tumors are usually found in the chorionic membrane, protruding, as a rule, on the fetal surface of the placenta. This tumor, as you see, does not protrude, at least not now, on the fetal surface. I did not receive these specimens until the tumor had been shelled out, so that I do not know whether it protruded on the fetal surface of the placenta. The lining of this mass or angioma was formed by Langhans' cells, with little syncytium. There is no decidua in this tumor, and decidua has never been found in connection with it. Degenerated chorionic villi never give rise to these tumors. They are not tumors of the villi, and no normal or degenerated villi have ever been found to form the pedicles of these tumors. The tumors are attached to the chorion, but not to the villi. These tumors are harmless. It is not known that any of them have ever given rise to malignancy. It is not known that they interfere to a great extent with the nutrition of the fetus; it is not known that they are caused by any pathological process in the mother, although in a number of cases conditions possibly leading to stagnation in the uterine circulation have been observed, but in others they were absent. Eclampsia, vomiting of pregnancy, disturbances of the circulation have been reported in connection with these tumors, but not with such regularity that one would be enabled to assume a connection of cause and result. These tumors are interesting as different from those of the epithelium of the chorion, as they belong to the connective tissue of the chorion. A report of the case will be given to you by Dr. De Lee.

DR. JOSEPH B. DE LEE.—There is very little to add to what Dr. Ries has said regarding this case of angioma of the placenta. The woman was a multipara, it being her second or third child. The third stage of labor was normal, the placenta coming by the Schultze method. Inside the placenta this tumor mass was found slightly adherent to the chorion, and in taking it up it peeled readily out of its bed. I thought it was simply an angiofibroma, which I had read about, but had never seen. The woman made a normal recovery, and I have not heard from her since.

She had no eclampsia; no difficulties in her previous labors, no heart disease, and is a big, healthy, blooming woman.

DR. JOSEPH RILUS EASTMAN, of Indianapolis, by invitation, read a paper entitled

CLAMP AND CAUTERY IN APPENDECTOMY.¹

DR. M. L. HARRIS.—Most of us have employed almost every method that has been suggested in treating the stump of the appendix. Some years ago I used to use the cautery to remove the appendix, with the idea in view, as has been suggested, of sterilizing possible germs which might escape during the very brief interval following the removal of the appendix and the invagination of the stump. But after using it for a time I gave it up, mostly for the reason that I did not see it did any good, and because it was more or less an annoyance to always have to use the cautery. I have come to a very simple method of invaginating the stump of the appendix with purse-string suture, which has been in use since Dawbarn recommended it. It is so simple, so quickly done, and so universally successful, that I do not see how it is possible to improve on it. The purse-string is introduced before the appendix is removed. I usually throw a ligature about the appendix to prevent the escape of the contents from the distal portion instead of clamping it. The stump is taken in the grasp of an ordinary tissue forceps without teeth, the appendix cut very close to it, and the forceps pushed directly in, invaginating the stump as the ligature is tied. This method, as I have said, is so simple, so easily done, so absolutely free from all danger of escape of bacteria, that I have come to use it in practically all cases where it can be employed.

DR. ALBERT GOLDSPOHN.—I am pleased to see this ingenious device the essayist has presented to us. I can see in many cases where it is necessary to excise the appendix it will be quite a material assistance to prevent the escape of infectious material. A large number of the appendectomies we make are of a prophylactic nature; they are often auxiliary to other operative work in the pelvis, and in those cases where the intestinal wall is not infiltrated, so that there is no danger of serous or sero-muscular sutures tearing out, and particularly in those instances in which it is possible to strip the appendix of its serous coat, we now remove the appendix very generally, to prevent mischief it might make in the future. In such cases it is unnecessary to open its lumen at all. It is unnecessary to make any opportunity for the extravasation of intestinal contents, by inverting the appendix, as first suggested by a New York gentleman, whose name I cannot now recall, and later advocated by Dr. Baldwin, of Columbus, Ohio. This method I have resorted to in quite a large number of cases during the last two years, and I like it, because I know that I do not open the intestinal lumen, and extravasation of material is out of the question. The technique is just as easy, just as simple as amputation and inversion of the stump, and the

¹See original article, page 21.

results are certainly just as good, so far as my own observations and those of Dr. Baldwin are concerned. There is no bad result from a sloughing appendix when it is inverted, inside out within the cecum. I do not know whether all the men have observed the technique I have used in these cases or not. My method has been to ligate and cut the mesentery of the appendix, and then scalp the appendix, pulling its serous coat off; then I simply begin the inversion act at the end of the appendix with the thick end of a needle and complete it with a small probe until it is entirely inverted, until it has disappeared within the lumen of the cecum, and close its base with several sero-muscular sutures. That is all there is to it.

With reference to the subject of appendicitis in gynecological surgery: to my mind the more important feature by far than the technique of the removal of the appendix is the diagnosis between appendicitis or pelvic peritonitis of appendiceal origin, and pelvic peritonitis from the uterine adnexa. Such a diagnosis, as has been said, is oftentimes quite impossible to make positively, but this is not a sufficient reason why we should not exercise our best efforts, at least exercise due diligence in making this distinctive diagnosis for the important practical reason, namely, that peritonitis of appendiceal origin should be relieved at once, oftentimes before the sun goes down, or before it rises; whereas pelvic peritonitis, originating from salpingitis, from the genital tract, if there is no intestinal leakage from any source, should not be operated on in the acute stage. Such cases should be treated medically until the acute condition has subsided, until nature has pointed out distinctly to anyone who enters there what it is able to help to a recovery itself. For if the surgeon operates in the acute condition, he will remove parts that he would not remove after a few weeks have elapsed.

DR. EASTMAN.—I shall have very little to say except to thank the gentlemen for discussing my paper. I agree with Dr. Harris that in most cases the technic of appendectomy is simple. It is usually a very easy matter to remove the vermiform appendix, but in case the appendix may not be brought readily into the abdominal wound, it is not always easy to remove the appendix and invaginate the stump without permitting the escape of a little pus from the lumen of the appendix into the peritoneal cavity.

When the purse-string of Dawbarn is used, it is possible to explore the stump canal and assure one's self that drainage will take place in the lumen of the cecum and not between the cecal coats. When the purse-string is used, there is no danger of rupture such as exists when the circular ligature is applied distal to a stricture of the lumen of the appendix at its base.

The clamping of the appendix base with a light clamp, particularly if the cecum be held down by adhesions so that the field of operation must be held in the wound by slight traction, will effectively militate against the escape of infectious contents of the

appendix. The clamp is serviceable in holding the parts up in the wound. If the tissues are friable, this cannot be so well done with guy ligatures or with the fingers.

The advantages of the clamp summarized are as follows:

It prevents the escape of purulent or infectious contents of the cecum or appendix into the peritoneal cavity.

The shields hold back obtrusive coils of intestine and prevent trauma to the serosa.

The clamp holds the stump of the appendix in a convenient position in the abdominal wound.

It compresses the base of the stump, facilitating invagination.

It shortens the time of operation.

It minimizes hemorrhage.

Until we can claim 100 per cent. of cures in appendectomy, we cannot consistently say the matter of technic is res adjudicata.

DR. G. SCHMAUCH, by invitation, read a paper on

**MALIGNANT VAGINAL CHORIOEPITHELIOMA (SYNCYTIOMA) AFTER
LABOR AT TERM, ITS ETIOLOGY AND RELATION TO
EMBRYONAL TUMORS.**

Short description of a case of malignant vaginal chorioepithelioma after normal labor, observed by the author in the Royal Woman's Hospital in Berlin (Olshausen). A woman, 25 years old, had four children. Three weeks after the last labor, which was normal, a sudden profuse hemorrhage occurred from the vagina. The bleeding was first thought to be caused by the retroflected uterus. After recurrence of the hemorrhage another physician located a reddish-blue nodule in the vagina (ruptured varix, as he thought) and sutured the bleeding wound. Soon, however, a new hemorrhage occurred. Later on two other physicians who were called in, performed an excision of the bleeding tumor, doing a curettage of the uterus at the same time, but were unable to stop the hemorrhage. Nine weeks after delivery the patient was brought to the hospital. The diagnosis was chorioepithelioma. A successful operation was very doubtful, as the tumor was found to have spread into the right parametrium. Ten weeks after delivery, the patient died, a few hours after an attempt to excise the vaginal growth, which procedure was indicated by several new hemorrhages.

A post mortem made the next morning showed vaginal chorioepithelioma with metastases in both kidneys, lungs, the spleen, the cerebrum and cerebellum, embolism of the arteries of the left lung, and thrombosis of the right spermatic vein. The uterus as well as the adnexa was perfectly free from the growth. The vagina showed the operative defect in the right side, the corresponding parametrium was infiltrated, the blood vessels partly thrombosed. This case of vaginal chorioepithelioma ran an exceedingly rapid course and is rare, as there are only 6 cases reported after labor in term, where the uterus has been free from

growth. All these cases ended fatally; a post mortem was only obtained in three.

The histological picture is that of a typical chorioepithelioma, *i.e.*, Langhans' cells surrounded and permeated by syncytium.

These tumors were first described by Sanger, but were not understood owing to their complicated structure before Marchand's investigations. The peculiarity of this growth is, that it does not consist of maternal, but of fetal cells, which have their origin in the epithelial layer of the villi of the placenta. Another important point is, that these growths are built up, without blood-vessels and connective tissue. Though this neoplasm consists of epithelium only, it is not a carcinoma; again, while it extends by means of the bloodvessels, which is common to the sarcomata, it is not a sarcoma.

The microscopical investigations of the writer lead him to think that syncytium and Langhans' cells are not to be taken as two different cells but that the former one is only a stage in cell-life of the latter, of the trophoblast; therefore, he thinks that the syncytium is of fetal origin. The sections of the growth lead him to conclude that the syncytium is no sign of degeneration, but a sign of maximum vitality, brought on by superior conditions of nutrition. In the points, where the meshes of the syncytium interlace, cells arise in the syncytium from the shape of the Langhans' cells, which have to be taken as "daughter cells" of the syncytium.

A great diversity of opinion existed until the last year in regard to the nature of the syncytium, whether it is a maternal or a fetal product. Final information developed through Schlagenhauer's investigations, in which he found chorioepithelial proliferations in teratomas of the testicle and in the "Breuss" case formations resembling the vesicles of hydatid mole in the heart of a locksmith. Furthermore, Pick succeeded in finding a hydatid mole in a dermoid cyst in connection with tubal pregnancy and chorioepithelial proliferations in a dermoid cyst, removed from a nine year old girl. This proves, that embryonal germs may produce fetal membranes, also it shows that pregnancy is not necessary to develop chorioepithelial formations.

The writer raises objections against Schlagenhauer's theory and wishes these growths to be understood as teratomas, as congenital tumors, which develop from a germ, which under normal conditions is used to produce fetal membranes and which is noticed in the earliest pregnancy.

The author's objections to this theory are :

1. In many cases there is no primary tumor, which corresponds to the findings in our case.
2. In many cases a direct connection and development of the tumor from the epithelial cover of the villus may be seen in the section.
3. This neoplasm is made up only of epithelial cells and no

other tissue. There have never been found derivatives of the meso- or hypoblast in a chorioepithelioma.

4. There is no reason, no analogy in pathology, to assume a misplacement and deportation of a fetal germ from one body to the other, from the child to the mother. If such process were possible, then we ought to have all kinds of teratomas as consequences of pregnancy.

We have to-day given up the theory of parthenogenesis. The Marchand-Bennet theory of embryonal tumors is now accepted by most authors. Whether a fecundated polar globule or a misplaced blastoderm gives rise to the teratoma is at present not decided. The blastomere could as well produce fetal membranes and their derivatives. The teratomas do not necessarily have to contain representatives of all the three germinal layers, as shown by the so-called struma ovarii, Saxer's dermoid cyst and by the teratomas with chorioepithelial proliferations, where ectodermal products are chiefly developed and where the metastases in most cases only contain them. The embryomas, teratomas are a product of the epoch of the furrowing of the egg, while the real dermoid cyst arises at the time of the existence of the germinal layers. The dermoid cyst arises through an ingrowth and detachment of the cutis and ectoderm, but at this process organs and tissues, which are lying close by, might be drawn along. Chorioepithelioma malignum is a product of pregnancy, brought on by the deportation of parts of villi and their epithelial layer. The syncytial buds hanging in the blood-current can easily be deported; and this deportation is, at Toten has shown, a physiological art.

There are two theories to explain the etiology of the chorioepithelioma:

First, the opinion of most authors, who ascribe a special dignity, the peculiarity of a malignant cell to proliferate without purpose, to the epithelial layer of the villi in cases, where chorioepithelioma arise after pregnancy. The second, in the writer's opinion, is as follows: The trophoblast and its developmental stages, Langhans' epithelium and syncytium preserves the faculty of proliferating, which is the peculiarity of all embryonal tissues during the whole time of pregnancy, but displays it only in case of certain changes in the maternal organism. Since we have no examinations of placentae of woman, which after labor become affected with chorioepithelioma, we really know nothing about histological changes in the epithelial layer. All we know is, that the trophoblast and the syncytial cells are able to invade the maternal organism, in a way without comparison in physiology. This behavior is perfectly equal to cells of a malignant growth, as for example the carcinoma. If such great energy of growth can be attributed to the embryonal cells, then the organism of the woman ought to have protective forces against them which annihilate the physiological deportation of parts of villi. We, as other authors, assume, that according to Ehrlich's side-

chain theory, syncytiolysins are formed in the blood of the pregnant woman against the scattered cells and cell-products. As long as the organism of the woman is producing antibodies, the deported cell mass will remain local, will be expelled or buried in fibrin. Local tumors only will be possible in the case of languishing protective powers and might be successfully removed by an operation. A return of the protective powers after general strengthening of the body may hinder the dissemination of the germs. General proliferation is only possible when there is a total lack of immune bodies. The antibodies formed in the maternal organism keep the trophoblast within bounds, lack of them will bring on proliferation of the epithelial layer of the villi as in hydatid mole, and in consequence death of the fetus. The same defect explains in the most natural way the frequent appearance of chorioepithelioma after hydatid mole.

DR. FRANKLIN H. MARTIN (after having examined Dr. Sandberg's patient).—I wish to make a brief report of my examination of the case presented by Dr. Karl Sandberg. The vagina is normal, free from indurations of any kind; cervix small, freely movable, with no indurated attachment in any direction. Field of vagina surrounding cervix free from submucous or other induration. In right broad ligament, two centimeters from cervix, a distinct induration can be palpated, which extends to the side of the pelvis. Sacro-uterine folds free from induration. No induration felt in left broad ligament. On deep pressure in lower abdomen, with counter-pressure, with finger in vagina, no induration centers are discoverable. In the opinion of your examiner, the pelvis of this patient is now free from malignant extension of the disease or any kind of development which can be palpated.

DR. PALMER FINDLEY.—I have the uterus and vaginal portion of the cervix removed by Dr. Sandberg from the patient he has presented. In size it is about that of a three months' pregnancy; it is firm and somewhat irregular. The tube on the left side is two inches higher at its uterine end than on the right side. This is due to the tumor mass located in the fundus of the uterus. The general color of the specimen is dark red. Its consistency, as was described by Dr. Sandberg in the clinical report, is rather firm and elastic. There are several small nodules varying in size to that of a hazelnut appearing on the surface of the tumor. I notice here and there the peritoneal covering is lost; whether this is accidental or not, I do not know. Opening up the tumor we find what appears in every way to be a large coagulum of blood, covered above by peritoneum, and no musculature. At the internal os there is a thick musculature which tapers off gradually. Closer examination shows that the cavity of the uterus is isolated from the tumor mass; in other words, that this tumor seems to be in the musculature of the fundus, and not connected with the endometrium. If this is a primary growth, and it undoubtedly is, it would seem to involve the musculature of the uterus, and not the placental site. Of the nineteen cases which I

have been able to find in the literature, where the growth has been primarily outside of the placental site, two have been in the wall of the uterus. On the right side the cervix is infiltrated with blood. Under the microscope there can be seen syncytial and Langhans' cells. The appendages are not involved apparently. I have not made a careful examination as to that, but there is no tumor or blood mass in them. I have not the vaginal tumor, but from the microscopic sections of the growth the secondary vaginal tumor is largely made up of syncytial and a few Langhans' cells. There are no chorionic villi present. There are a number of blood vessels which seem to be almost filled with syncytial and Langhans' cells, and the majority of the blood vessels in some of the specimens appear to be very much infiltrated with syncytial and Langhans' cells.

We have here a specimen of a primary syncytial chorioepithelioma arising outside of the placental site. It is similar to the case which was referred to in the paper we have just heard, in which the primary growth was in the body of the uterus, the secondary growth in the vagina, for which curettage was made, some portion of the tumor removed, and found to be a typical type of chorioepithelioma. Nothing was done further than to remove the vaginal growth; there was almost entire disappearance of the uterine tumor, and subsequently the woman bore three children. In the case of Dr. Sandberg's the woman might have recovered without operation. Certainly we cannot say that she could not have recovered in the light of the case above referred to but at the present time we are not in a position to make an early diagnosis of malignancy of these growths and hence must treat them all as malignant.

DR. J. CLARENCE WEBSTER.—I think the Society is deeply indebted to Dr. Schmauch for two reasons: (1) For giving us this demonstration under the microscope, because certainly it has not been equaled in this country before; (2) for bringing up to date the various views that have been put forward regarding this whole subject.

Those of you, who are particularly interested in this line of work, will recognize that his information is quite up to date. The subject is such a wide one that it is very difficult to limit one's self.

I would like to refer, first, to the relationship of the syncytium to the Langhans' cells. There can be no doubt that both these structures have proliferative powers. When we remember the early formation of the syncytium from the trophoblastic cells lining the primitive lacunae, and later on in pregnancy note the large number of syncytial masses covering the whole chorion and penetrating the muscular wall of the uterus, we cannot but decide that there has been a proliferative tendency. Until very recently it was regarded that the syncytium was a degenerative product, analogous to the stratum corneum of the skin, but we cannot hold that view now.

I have examined a good many specimens of syncytioma ob-

tained from various European and American workers, and have concluded that the Marchand view is the correct one, the one that Dr. Schmauch adheres to, namely, that these growths are chorioepithelioma.

I have been particularly interested of late in studying the ovary to note, in some specimens obtained during pregnancy collections of large cells. It has been pointed out by several workers that decidual transformation is found in the ovary, and also in the peritoneum in pregnancy, especially in the peritoneum of the posterior wall of the uterus.

One of my laboratory assistants, Mr. Koch, has examined a series of specimens from pregnancy to the number of ten or eleven. In that series I have found these large cells in three different specimens in the ovary, and in two specimens in the peritoneum of the posterior wall of the uterus. In studying the specimens of the atypical chorioepithelioma demonstrated by Dr. Schmauch, I am reminded of some of the ovarian cell groups. One of his microscopic specimens shows a collection of detached cells, without the characteristic syncytial arrangement. Many of the large cell collection, however, bear a striking resemblance to decidual cells and may be of this character.

Dr. Schmauch has given me a specimen of an eclamptic ovary with these same cells, and they are practically the same as those to which I have just referred. It may be that the large cells which gave me so much trouble in the specimen of ovarian pregnancy, which I demonstrated at a previous meeting, are atypical syncytial cells. If these views be correct, we may still hold perhaps to the view expressed some time ago that true decidual formation is entirely a characteristic feature of Müllerian tract, though, of course, knowing what we do of the occasional inclusion of Müllerian tissue in the ovary, it might be that in some cases the large cells found in the ovary of pregnancy might be a transformation of Müllerian tissue. One of the most important conditions under consideration is the testicular growth resembling syncytioma. If anybody is in doubt as to the identity of the syncytioma from the uterus and that in the testicular tumor, a moment's study of the microscope will convince him that his doubt may be dispelled. The inclusion of embryonal elements must explain these teratomous tumors in the testicle.

DR. FRANK A. STAHL.—It is seldom one is offered the opportunity to meet a so beautifully prepared collection of specimens as the present one, and therefore I feel grateful to Dr. Schmauch for this opportunity of looking through his series upon this interesting subject, one so full of forensic histology. They are especially valuable for their richness in clearness of detail and distinctness in outline. I suppose it would be quite difficult to find another series its equal. Going through them, a line of thought was suggested to me, which I would like to present to the Doctor, possibly in the nature of a few questions. His slides are all, or nearly all, if I remember aright, metastatic in nature. These

cases are discovered, as a rule, post-partum, never ante-partum. From what did they originate? From the early villus or the maturer one? By direct cell wandering, or only by the admitted route, the indirect or circulatory route? Those metastases, pelvic, as uterine and vaginal, can easily be explained by contiguity, a direct wandering of the nucleus or cell, the so-called Langhans' cell, into the contiguous tissues. Those metastases, as of liver, brain, kidney, etc., can be explained by the indirect wandering of the cell through the circulations, blood and lymphatic. But the direct wandering of the cell is disputed; among such stands Veit, 1901. Again, Do these nuclei or Langhans cells possess proliferating characteristics, another point at issue? I contend they must. Again, the early villus shows a rich syncytium, with nuclei and a so recognized characteristic Langhans' cell layer. These disappear as maturity grows, leaving only nuclei at maturity. Now, from which unit, the nuclei or the Langhans' cells, do the metastases develop? In the present series, the metastases show a marked type of a perfect (villus-double layer) histological formation. Did the nuclei wander early in pregnancy and remain latent, or did later the Langhans' cells wander, and they remain latent? Were the metastatic-causing nuclei, or the cells, from the early villi, or were they from the later, maturer villi; in the latter case, then, only nuclei could wander, for there are only nuclei present to wander, no Langhans' cells? Is it not true that the Langhans' cells, both in the mater formations and the metastatic, are but an evidence of a transitional stage from a previous nucleus? Surely. Likewise, here in the metastasis there is shown a perfect proliferation of the nucleus and cell, like in the union (connective tissue) of the mater placenta with the uterus or tube, and in the intervillous or bridging tissue of the placenta, uterine or extrauterine. And does not the fact of this proliferative feature of these nuclei—cells—but prove Kühne's theory that the Langhans' cells possess proliferative characteristics? For so K. explains the atypical development of the so-called decidua in extrauterine pregnancy, viz., it is fetal, not maternal, in nature. Many deny this, again among them Veit. Again, how does Dr. Schmauch explain the disappearance of the Langhans' cell from the mature villi, where, like in the earliest villi, only nuclei are present?

It may be that the scope of Dr. Schmauch's paper did not intend to touch upon these points, but his specimens being so rich in variety, beauty of detail and outline, they suggested themselves while examining his specimens. And then, too, these are some of the histological problems, obstetrical as well as embryological, men throughout the world are trying so earnestly to solve.

DR. CARL WAGNER.—Two years I spent some time in the study of this important question and therefore would like to mention the following points: First, the fetal cells wander along the blood vessels deep into the mucosa clear into the upper layers of the

muscularis. Second, the placental giant cells advance with the blood current into the lumen of the blood vessels. Third, as regards the aspect of these tumors, there are different areas which resemble carcinoma or sarcoma. The cells wander sometimes like those of carcinoma in closed chains, or like sarcoma in separate cells with connective tissue between them. Fourth, there is a great change of cell formation. Fifth, the cells wander with preference toward the blood vessels, and even into them so that often the walls of the blood vessels are substituted by fetal cells, especially those of the veins. Sixth, in no malignant growth have we such rapid metastasis as in cases of syncytioma. The original tumor may be very small. Seventh, in all metastases we find fetal cells. Eighth, in a number of cases we find as the first symptom of metastasis, hemoptoe. Ninth, the cell proliferation in the lungs in metastasis takes place exactly like it does in the uterus.

In regard to the diagnosis, Neuman claims that malignancy is characterized by the fact that such epithelial cells wander into the body of the villi; this is, however, not absolutely reliable. It remains to be proven in these cases, (1) that some of the fetal cells are retained in the uterus; (2) that such proliferating cells extend not only into the mucosa, but into the upper layers of the muscularis (especially whole chains of cells); (3) that we have karyokinesis.

DR. EMIL RIES.—I wish to correct one statement that has been made, namely, that this is the first specimen of syncytioma that has been shown in Chicago. The first specimen presented before this Society and in Chicago was demonstrated by Dr. Bellel, who was pathologist of the Northwestern University Medical School at the time, and the patient was operated by Dr. Schroeder for tumor of the liver. This tumor of the liver proved to be a metastatic syncytioma. The case occurred a few months after a miscarriage, and the woman had had a curettement after miscarriage on account of hemorrhage.

This leads to the second point, which is that these cases would not go on unrecognized, undiagnosed, if the general custom were not to throw away curettements instead of examining them. These cases point out very distinctly the necessity of examining masses that are removed by curettement, especially after labor or abortion, where there is any question as to the cause producing the hemorrhage.

The cases reported by Dr. Schmauch leave us in a quandary as to what to advise our patients after we have made a diagnosis. He referred to one case in which a vaginal tumor was removed, showing typical syncytioma, in which curettement of the uterus proved it to contain syncytial masses in the muscular coat of the organ, which had been perforated during curettement. The woman was advised to have her uterus removed, but refused. She was seen three years afterward, and had a normal labor. She had escaped destruction by the syncytioma; the uterus had gone

on performing its physiological function to a full term pregnancy and normal labor.

There are other cases in which vaginal metastases could not be removed completely, nevertheless the women recovered. This raises the question as to the treatment of these cases. What shall we advise our patients? Where we have a syncytioma, proven by microscopical examination of masses removed from the uterus by curettement, probably everybody nowadays would advise hysterectomy. We might remove the organ unnecessarily, but at this time and at the present state of our knowledge on the subject, we can do no better.

I wish to add that I know of another specimen removed from a patient in Chicago by curettement and masses removed were diagnosed as syncytioma malignum. The patient died soon after curettement. There was no post-mortem made. Dr. Sandberg's case would, therefore, be the third case in Chicago.

DR. SANDBERG (closing the discussion on his part).—I wish to accept the correction of Dr. Ries as to this not being the first case reported but the first case operated in Chicago.

In regard to whether we would operate on these cases or not, I certainly think we should do so, in view of the literature on the subject. The case I operated on was so far advanced that the tumor mass was perforating the uterus in various places, growing through the surface of the uterus into the peritoneum of the parietal wall, and it appeared to me that it was only a question of a very short time when metastases would have taken place. In fact, I feared at the time I operated it was too late. The diagnosis was not made before the operation, for the reason that there was too short a time to look into the case carefully and thoroughly. She could not give us any information as to the vaginal tumor, and did not know how long she had had it. In fact, she did not know it was there.

I want to express my thanks to Dr. Findley for preparing the excellent slides he has under the microscopes.

DR. SCHMAUCH (closing the discussion).—I wish to thank the members of the Society for the interest they have taken in my paper.

There are one or two points I would like to refer to. In my opinion the chorioepithelioma of woman is always the consequence of pregnancy. Dr. Findley reported a case this evening where the last pregnancy occurred many years before. There are other cases like this reported in the literature, but I think that in all these cases a pregnancy of a few weeks took place, which was not observed by the patient. In most of these cases the authors report a cessation of the menses for a shorter or longer period or the passing of larger clots. So there is always some point, which raises the suspicion of a short, unobserved pregnancy. In the case of Fleischmann, the menses had stopped for 6 months and as the specimen of the curettage shows, which I demonstrated to you to-night, the mucosa of the uterus is transformed on the

surface into a perfect decidua. Some authors, as for example Risel, who has reported such a case, I think, that the chorioepithelial growth exerts the same influence as a fecundated ovum in the mucosa of the uterus. Decidual cells may last for years, as is known. However it is more probable to assume a pregnancy, which was not observed by the bearer of the chorioepithelioma, as Fleischmann has done in his case.

If I understood Dr. Webster well, he seems to have some doubt about the possibility of decidual formations in ovaries of pregnant women. I have some specimens of ovaries of eclamptic women with very well developed nodules beneath the endothelium and around the blood vessels. There is no doubt, that all these cells, decidual cells, Langhans' cells, syncytial cells look somewhat alike and sometimes it is hardly possible to state where the tumor-cells start and where the decidua cells begin. This is the reason, which caused Sanger to take the chorioepithelioma for a sarcoma of the decidual cells. However, there are some differences between them. In the specimen of Dr. Fleischmann, just mentioned, you can differentiate them very easily. Their nuclei never stain so deeply. Lutein cells and luteinic polycystic degeneration of the ovaries have been brought in connection with the syncytium. The overproduction of the lutein should cause the proliferation of the epithelial layer of the villi. However, there are cases of chorioepithelioma in which the ovaries were perfectly normal. Dr. Stahl's remarks concerned the findings on the villi towards the end of pregnancy. In the last month of pregnancy the villi are covered by the syncytium only. We do not know anything about placenta of women, which afterwards acquired a chorioepithelioma.

DR. STAHL.—Why is it, at the beginning of pregnancy, there are epithelial cells lining the villi, while at the end there are not epithelial cells there, but only the nucleus? (Here the President informed Dr. Stahl not to interrupt the speaker in his closing remarks without the consent of the Society. A vote was taken in regard to whether Dr. Stahl should speak again, and consent was not given.)

DR. SCHMAUCH (resuming).—I remember having seen a placenta of a case of pregnancy at term in Berlin, where the lining of the villi showed a typical Langhans epithelium and syncytium. I am not able to prove in my case, that the growth has developed only in the last weeks of pregnancy. My intention was to emphasize, that the dissemination of the tumor cells in this case must have taken place at the same time, as the largest tumors were found in the brain and the lungs, there was no primary tumor. The vaginal metastasis cannot be explained except by a retrograde embolism, which probably occurred during labor.

DR. RIES pointed out a peculiar course, that some of the demonstrated cases took. Some of them got well, though the operation could not remove the whole growth. We speak of a benign and malignant hydatid mole, of a benign and malignant vaginal meta-

stasis. But this difference is only clinical. The microscopical picture is the same. Concerning the prognosis, we have to consider the general condition of the patient and the possibility of metastases, which have spread over the whole body. A vaginal metastases, always makes the prognosis of the case serious. We may expect at any time a chorioepithelioma after hydatid mole, and therefore a curettage should be made in these cases 3 weeks after the removal of the mole. The microscopical picture of such a curettement nearly always reveals some syncytial masses and it is sometimes difficult to decide, whether it is a fresh proliferation of syncytial cells or whether the removed masses are only remnants of the previous hydatid mole.

RUDOLPH W. HOLMES, M.D.,
Editor of the Society.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of April 12, 1904.

First Vice-President, DR. J. RIDDLE GOFFE, in the Chair.

DISEASED APPENDIX REMOVED FROM AN INSANE PATIENT WITH THE VISCERAL DELUSION OF EVIL SPIRITS DWELL- ING IN THE ABDOMEN.

DR. LEROY BROWN.—M. F., aged 34, was admitted to the Manhattan State Hospital on February 5, 1903. She was a native of Ireland and a cook by occupation. A diagnosis of paranoid condition was made. Family History: Paternal grandfather alcoholic; he spent money foolishly. Her older sister was peculiar and nervous and died at the age of 42. A grandmother and an uncle died of consumption. Personal History: She menstruated at 12 years, was backward in her studies, of a retiring disposition and easily irritated. She spent money foolishly, would lend it to any one who would ask for it and bought expensive clothes. One year previous to her admission to the hospital she had become very religious. She became sad and said that God had deserted her; she was unhappy and could not sleep or eat and she thought the best thing she could do was to put herself out of the way. She continued to work until December, and then became so weak and nervous that she gave up her position. The following two weeks she cried a great deal, complained of pain in her head and sensations in her stomach, and said she was going insane. Finally she said there was the evil spirit of a man crawling around in her body. On admission she was quiet and tractable; found to be oriented as to time, place and person, and had a good grasp on surroundings. She said that God spoke to her and told her not to worry about the evil spirit. She showed no memory defect and

was industrious and contented. She had antelexion of the uterus with endometritis. Dr. Broun performed divulsion and curettage. Later, an enlarged appendix was palpated. Appendectomy was performed and the appendix was found to be large, inflamed, dilated and slightly clubbed. The post-operative history was uneventful. The cicatrix was small and well united. She still retained her former delusion. Dr. Manton, of St. Louis, was the first, he thought, to point out that these visceral delusions founded on an existing morbid condition were generally to be regarded as expressions of an actual physical suffering though the patients were incapable of correctly interpreting the suffering arising from the disease. It was well known that post mortem findings showed that while the peripheral irritations were capable of giving rise to delusions, yet visceral delusions might exist without any pathological cause. Manton cited several cases of long standing on whom he operated. In several he found pathological conditions existing in the abdomen. In some he failed to find any cause for the delusions. In those in whom he found a cause and removed it, the delusions in some instances disappeared and in others persisted. In the case just cited the delusion of an evil spirit still existed but its location was transferred from the right side to the epigastrium. He had had occasion to report to the Woman's Hospital Society a similar operation for acute appendicular abscess. The patient's delusions were much improved; in fact she had every appearance of being perfectly sane when discharged. Manton, in speaking of this subject, said: "There can be no doubt of the relationship existing between the delusions manifested and the morbid condition found at operation or after death; it was also presumable that could such patients be operated upon early in the course of the disease before the idea had become a fixed one, the relief of the physical suffering in the majority of cases would bring about a cure of the delusions."

ABDOMINAL PAN-HYSTERECTOMY FOR PUERPERAL SEPTIC INFECTION.

DR. HERMANN J. BOLDT.—This specimen is presented because the condition found on operation again proved the unreliability of the subjective and objective symptoms in many instances of puerperal infection, as to when a major operation is indicated. The patient, 19 years old, was seen in consultation on March 4. One week previously she had given birth to her first child and her labor was normal. There was some elevation of temperature and acceleration of pulse rate when the family physician first saw her. On the day following the confinement the patient's condition was said to have been practically normal except that the woman complained of some pain in the right lower abdomen. On the fourth day after confinement the temperature rose to 104° F. The doctor then began to use intra-uterine irrigations at regular intervals, although he was sure that no part of the conception products remained *in utero*. On the day she was seen by me a

chill of 20 minutes duration had been present, which was followed by a temperature of 107° F. Delirium was present for a short time following the chill. The uterus was found to be greatly relaxed in consistence, and enlarged to about double the size that it should have been for that period post partum. The cervix was patulous, but no foreign substance was thought to be in the uterine cavity. The lochia were said to have been normal, no odor being present at any time. It was not deemed justifiable to produce the trauma necessary to examine every part of the uterine cavity. The parametria were free, likewise the pelvic veins and the process was limited to the uterus. The woman was transferred to the hospital and all local interference stopped and streptolytic serum injected. An intravenous infusion of 1,500 c.c. was given and an ice-coil applied to the abdomen and alcoholic stimulation used. At no time during the entire illness was there even the slightest abdominal distention. Neither was abdominal pain present at any time during our observation except a burning sensation over the region of the enlarged uterus. The temperature went down to 99° F. and varied from that up to 101° F. for several days; the pulse, however, was full of quality throughout and varied from 110 to 130. The pulse and temperature were quite characteristic of septic peritonitis. On March 16, 17 and 18 the temperature at times rose to 105 towards evening. On the 17 a chill of a few minutes duration was present. Several blood cultures taken during the illness had always given a negative result. On the 18 another careful examination showed no difference in the local findings than those at the time when the woman was first seen by me. Gentle exploration of the uterine cavity with a dull curette brought forth a small piece of decidua. Although no local treatment of any kind had been used, there was nothing abnormal about the lochia during her hospital stay. After the exploration of the uterine cavity, it was swabbed with tincture of iodine. This was followed by no improvement. On the 19 of March it was decided that in view of the fact that the septic process was seemingly still limited to the uterus and because it was evident that the woman could not survive with a continuance of the former treatment, to remove the organ by abdominal pan-hysterectomy. On opening the abdomen it was found that diffuse purulent peritonitis was present. Over the uterus the intestines were agglutinated by slight adhesions, which after being separated (showed the presence of sanguineous serum in the pelvis. The fundus uteri appeared gangrenous, the rest of the organ was dark red and highly inflamed. The operation, including the closure of the upper part of the abdomen and the placing of dressings, required less than fifteen minutes, which probably accounted for the entire absence of shock after the operation. The pelvis had been packed with gauze which was brought into the vaginal and lower abdominal wound. Thorough flushing of the abdomen with saline solution had been done. The temperature, which before operation had been 106° F., went down to

103.8° by the morning of the 20th. Even the heart's action improved temporarily. Later, however, the heart again became worse in its action, and the woman died during the night of the 21. The temperature before death rose to 106°. It is my opinion that if the operation had been done on the 5th of March instead of the 19th the woman's life would have been saved. The accumulation of bloody serum in the pelvis shows the desirability of making an extensive opening in the posterior vaginal vault and packing with gauze for drainage as has been advocated by Polk and Pryor, a procedure to which I was formerly opposed, but which will be given a trial in the future.

LARGE HEMATO-SALPINX, DUE TO TUBAL IMPREGNATION?

DR. BOLDT.—The diagnosis of tubal pregnancy is made with a question mark because the findings at operation do not fully tally with those of tubal pregnancy. On the other hand the history favors such an assumption. As soon as the specimen has been sufficiently hardened for sections a further report will be made. A. F., æt. 36, had her last child six years ago. Her menstruation had always been regular at intervals of four weeks except the March flow which occurred in three weeks, and since then there has been more or less atypical bleeding. During the last six weeks the patient has been suffering from intermittent labor-like pains, which at times were very intense. Examination showed the uterus to be slightly enlarged and, to the left, a tumor with indefinite outlines. It felt like the tumors which we find in cases of progressing tubal abortion. On the right side an ovarian cyst about four inches in diameter was present. There was abundant colostrum. On opening the abdomen several ounces of dark blood were found free in the abdominal cavity. The cyst on the right side was resected, leaving as much normal ovarian stroma as was still present. The enucleation of the tubal tumor on the left side was very difficult because of the extensive and firm intestinal adhesions. Beneath the tube were several clots of old blood. The ovary was enlarged to about three times its normal size and was cystic. The presence of such extensive and firm intestinal adhesions favors the assumption of an inflammatory process rather than an unruptured tubal pregnancy at the sixth week of gestation.

RUPTURED INTERSTITIAL PREGNANCY.

DR. BOLDT.—This specimen represents the right cornu of a uterus ruptured by an interstitial pregnancy. B. B., 39 years old, married 20 years, three children, the last two years ago, supposed herself to be pregnant not having menstruated for seven weeks whereas she had always been regular when not pregnant or nursing. On April 3rd, at 3 o'clock P.M., she was seized with sudden and severe pain in the lower abdomen which radiated up to the epigastrium. She was exsanguinated and pulseless when seen by me at midnight. Under appropriate treatment she rallied

from her collapse and was then operated upon. The abdomen contained an enormous quantity of blood, fluid and clotted. I do not consider it advisable to operate upon patients when they are in deep collapse and absolutely pulseless. Usually they rally from such a condition under appropriate treatment, when an operation will likely be successful, whereas if operated upon before they have rallied the termination is usually fatal. The woman developed a double lobar pneumonia immediately following the operation and was near death for a couple of days, but has now passed the crisis and is making a normal convalescence.

RUPTURED LEFT BROAD LIGAMENT PREGNANCY.

DR. BOLDT.—B. B., æt. 32 years, was under my care several years previously and had, according to notes then taken, an endometritis and bilateral catarrhal salpingitis. She had been married ten years and had never been pregnant. Menstruation had always been fairly regular, but she had severe dysmenorrhea at times. Last menses was December 31st. February 4th she had a discharge of dark tarry blood lasting one week, but accompanied by no more severe pains than the severer attacks of dysmenorrhea which she sometimes had had on previous occasions. A physician who she consulted because of the peculiarity of the discharge, told her that this was nothing unusual. From that time on she suffered very much from nausea and vomiting. At times her nausea was unbearable, no food being retained, so that rectal feeding was resorted to. There were lancinating pains in the breast but they contained *no* colostrum. Since February the patient had also had pain in her abdomen as though she would menstruate but they would occur at intervals and only be of few minutes duration. Since then there was also pain in the rectum which became a prominent symptom. This had been gradually increasing in intensity. On examination the uterus was found to be somewhat enlarged, pushed upward and forward by a tumor which filled the pelvis and which was extremely tender to touch. The appearance of the patient showed that she was suffering intensely. In the office she had such an intense attack of pain that it indicated that a partial rupture of the gestation sac was in progress. As soon as she had rallied from this attack she was sent directly from my office to the hospital. On operation the abdomen was found to be filled with blood. The products of conception were removed *in toto*, with the fetus with the cord attached to the placenta. The adnexa were retained. The Fallopian tube on the right side was in a state of catarrhal inflammation. It seems inexplicable that with such straight history and with the local findings a diagnosis of the condition should not have been made previously or at least the existence of serious trouble in her pelvis because she had been frequently seen by physicians.

DR. H. N. VINEBERG.—With regard to the advisability of operating during shock in these cases or waiting until the so-

called shock has passed away, or the patient recovered from the shock, I am inclined to take the stand that in cases of internal hemorrhage from ruptured tubal pregnancy we should operate at once and not wait until the subsidence of the shock. I had an interesting experience of this kind about one year ago when the consultant took the attitude that we should wait. This patient became worse and it was with the greatest difficulty that the patient was saved. If he have hemorrhage outside we do not wait until shock has passed away, but we arrest the hemorrhage at once, and I think the same rule should apply to these internal hemorrhages. Furthermore, in a good many of these cases, as soon as you open the abdomen and relieve the pressure the patient's condition usually improves even before an intravenous saline infusion is given, showing, to my mind, that the shock is in a great measure due to the pressure of the blood upon the peritoneum and diaphragm.

DR. HENRY C. COE.—I believe that the majority of these cases are tubal abortions and that there is no immediate danger to life from hemorrhage. I have seen patients recover when the abdomen has been half filled with blood. I have no doubt that if some had been operated upon at the time of rupture they might have died on the table. In my early hospital days we knew practically nothing about ectopic so we let them alone and many recovered from the resulting hematocele. I do not mean to question the fact that there are cases of internal hemorrhage such as those reported to-night, in which the patient will bleed to death unless the abdomen be opened, but we should bear in mind the fact that the majority of these cases are not necessarily fatal.

DR. J. RIDDLE GOFFE.—In the recital of the last case the interesting point is raised whether or not it is best to leave the appendages of the opposite side in cases of tubal pregnancies when there is a catarrhal salpingitis present on that side. I would prefer to state it: Is an operator justified in removing the appendages when only a catarrhal salpingitis is present?

DR. E. H. GRANDIN.—I am sorry I did not have an opportunity to hear the recital of Dr. Boldt's cases. At the same time I have formed certain views in reference to this matter which I should like to set forth. I have in mind now two cases of ectopic gestation in which abdominal section was necessary with successful results. In one case it was at the 6th month, and in the other it was within 18 months, and it was necessary to re-open these abdomens because there was an ectopic on the other side. In other words, deducting my views from these two cases, I have come to the following conclusions: When the abdomen is opened for the purpose of removing diseased tubes or ovaries on one side, if the other tube or ovary is found on the border line I believe the best thing to do is to secure the consent of the patient or husband—and this should always be in writing—and remove the tube or ovary on the other side in order to avoid the probable risk of a second operation. I cannot too strongly emphasize the

importance of securing the consent of either the patient, her husband, or both, in writing. In any event, both husband and wife should be made to understand the probability of a secondary operation in such border-line instances when unilateral salpingo-oophorectomy is performed.

DR. H. C. VINEBERG.—Before adopting such an attitude there are two questions to be considered, (1) can slight catarrhal conditions of the tubal mucosa be recognized with the naked eye? When the condition is marked there is usually a closure of the fimbriated end of the tube, so that there would be no danger of future pregnancies in that tube.

(2) Is it an established fact that ectopic gestation is due to catarrhal salpingitis? The etiology of ectopic gestation is still enveloped in so much doubt that such a position is untenable. Hence the course such as the previous speaker recommended would be radical surgery with a vengeance.

DR. J. RIDDLE GOFFE.—The points raised by these gentlemen are very important. I think it is a recognized fact that the number of women who suffer from secondary ectopic is extremely small when compared to those with primary ectopic. From my experience I should hesitate to remove the appendages on the opposite side when operating for a primary ectopic. I do not feel that such a course is warranted. The presence of a sacculaton or other deformity of one tube is no guarantee that the opposite one is similarly affected.

DR. HENRY C. COE.—Williams settled this question some time ago when he stated as the results of his studies that an ectopic was not necessarily due to diseased condition of the tube. A certain number of cases may be due to diverticula, and were not at all the result of inflammatory conditions.

FIBROID OVARY.

DR. A. BROTHERS.—This specimen was removed from S. P., aged 39, married 21 years, never pregnant, who consulted me in July, 1903. Menstruation began at the age of 15, and was formerly regular, moderate in quantity, painless and lasted two or three days. On February 4, 1897, she entered my service at Beth Israel Hospital complaining of pain in the right iliac fossa. She was advised to submit to operation. The operation consisted of a curettage and packing of the uterine interior with gauze. The posterior vaginal fornix was then incised and the peritoneal cavity and pelvic organs examined. The uterus and left adnexa were fairly normal, and unmolested. The right ovary was found buried in adhesions, the result of pelvio-peritonitis, and contained an ovarian hematoma of moderate size. An effort was made to remove this ovary at the time but because of the dense adhesions in which it was buried the attempt was given up. The hematoma was incised and the blood allowed to escape. The cavity of the blood tumor was packed with gauze and allowed to drain *per*

vaginam. This was changed several times while in the hospital, and she was discharged cured on February 26.

On July 6, 1903, she complained of irregular menstruation. Her periods for four or five months recurred every two weeks. Before that there were delays up to six or seven weeks. The periods were recently of the four-weekly type. She seemed to suffer much from intra-abdominal pain.

Examination showed a large, round, hard tumor apparently connected with the uterus filling the lower portion of the abdominal cavity in the median line from the symphysis upwards. A diagnosis of fibroid uterus was made and operation advised. Operation showed a soft, fluctuating, round tumor the size of a fetal head which was found to be the right ovary.

Sections from the tumor showed portions to be mucoid or cystic in character. The microscopic examination of the hard parts showed it to be a pure fibroid.

This is the second large fibroid of the ovary which I have met in a fairly large gynecological experience.

FIBROID TUMOR OF THE OVARY.

DR. J. RIDDLE GOFFE.—I have here a solid fibroid tumor of the ovary; symmetrically round, and measuring four and three-quarter inches in diameter. It was removed from Mrs. Fanny N., on March 25, 1904, who gave the following history: She is 35 years of age; married 14 years; never pregnant. She has never had any pelvic disease that she knows of. For the past year she has suffered from pain more or less in the right ovarian region, running down the right leg. For the past four weeks the pain has been more intense, and for the past three days she has been confined to her bed, the pain radiating all over the abdomen. She has had no movement of the bowels for three days and she has been vomiting for the past 48 hours. She was sent to the hospital as an emergency case of obstruction of the bowels. On admission the temperature was 102.6, pulse 142.

The diagnosis was made of fibroid of the uterus, complicated by omental adhesions. Upon section this solid tumor of the right ovary was found, no other ovarian tissue on that side being present. The pedicle, consisting of the meso-ovary, the Fallopian tube and meso-salpinx, was twisted one and a half complete turns. The tumor was in an engorged state of congestion, even black in spots, and had commenced to undergo a superficial necrosis. Adhesions were already forming to the uterus, to the intestines, and to the omentum.

The pathologist, Dr. Jeffries, reports that the tumor is a pure fibroid, no suggestion of sarcomatous tissue being found anywhere, but it is hemorrhagic and degenerative throughout its whole extent. The ovary of the left side seemed free from disease and was not removed.

DR. R. L. DICKINSON.—I have seen Dr. Peterson's elaborate report in which he states that there are no cases on record of

fibroids of the ovary occurring in negroes. I have removed one as large as the specimen presented from a negro and it was a pure fibroid, according to the pathologist.

Subject for discussion :

HEMORRHAGE AND SHOCK FOLLOWING ABDOMINAL OPERATIONS.

DR. G. W. CRILE, of Cleveland, Ohio.—With your permission I shall confine my remarks to the management of shock and hemorrhage. In a severe case of pure shock, without loss of blood, as one contemplates the symptoms there arises the query as to where the bulk of the blood is concealed. It is not in the skin. It is not in the muscles, neither is it in the splanchnic area, at least not in the small vessels of this area. The splanchnic area on the contrary has become paler. Where, then, is the blood concealed? It is now well established that the distribution of the blood in the circulatory apparatus with the increasing depth of shock approaches similar to that after death. That is to say, the blood is transferred to the venous side of the circulation and is more or less subject to the laws of gravity. The patient has been bled in his own vessels.

If that is true then one would suppose that the symptoms of shock and of hemorrhage would closely resemble each other. This, I believe, is admitted by almost every observer. The character of the pulse, the pallor, the air hunger, the clammy skin, the loss of muscular power, the failure in the body temperature, the psychical symptoms, all bear a close resemblance to each other in shock and hemorrhage. In the absence of any history would it not be impossible in the majority of cases to make a differential diagnosis?

One might suppose then that in a case of hemorrhage and another of shock of equal gravity so far as the symptoms would indicate, that the case of shock, having its blood in its own vessels, would present a much more favorable prognosis than the case of hemorrhage. In spite of the advantage of the presence of the full quota of blood in the circulation in the case of shock the prognosis would not be so favorable as in the case of pure hemorrhage. If that is true, then there are certain factors of shock not found in hemorrhage. We may, I think, begin with the proposition that death from either shock or hemorrhage does not occur so long as there is a pulse of fair degree, indicating a sufficient circulation for the nutrition of the central nervous system.

The treatment, then, resolves itself into measures for sustaining the circulation, and since the heart is only secondarily involved in shock we may say that these measures may be only such as will increase the blood pressure, since if there is a sufficient blood pressure the heart will do its work in a normal manner.

As to so-called stimulants, surgeons not only in different countries but in the same country, the same city and even in the same hospital employ remedies of radically different physiologic action with apparently equal success. Alcohol is used by some,

others use strychnin, a fairly good antidote to alcohol, while another may use nitroglycerin, which is an antithesis to digitalis, which is used by many others. Ergotin is largely used by French surgeons, alcohol and strychnin by the Germans. Synergists and antagonists are freely combined by others in therapeutic confusion. In fact, almost every drug that is supposed to have some powerful effect upon the circulation is championed by some one as the best means of combating shock. This therapeutic confusion in the practice of the foremost surgeons of the day constitutes a strong presumption that none of these drugs is of much value. There should be little difficulty in determining whether an antagonist or a synergist gave the best results. May it not be true that the cases of shock that recover under the use of heroic stimulation do so in spite of rather than in consequence of the treatment? May we not call into question the efficiency of any form of stimulation? Since the sphygmomanometer has been in more general use the effect upon the blood pressure of the various psychical states, such as fright, etc., have been noted by many. Fright causes a marked rise in the blood pressure. Pain is also apt to cause a rise. It would, however, not be difficult to decide that a psychical stimulation by fright or a painful stimulation by burning would be followed by unfavorable reaction. Is it not possible that instead of action by stimulation that repose is required? So far as alcohol and nitroglycerin are concerned, they may be dismissed with the statement that they belong to the group of depressants, which, if given in sufficient dosage, will further depress the circulation. As to strychnin and digitalis, both of which increase the blood pressure, it has been noted that in the moderate cases, in which the prognosis if left alone is favorable, their effects are considerable. In the most severe forms where the circulation must have assistance or the patient will die, these drugs have proven themselves inert.

From my own observation in the operating room and in the laboratory, I feel strongly that a case of shock is best treated by securing masterful rest during which the circulation in the brain is favored as much as possible by means of gravity and mechanical help, while the restoration which only rest can give is developing. To secure rest morphin may be necessary, but the psychical rest can only be obtained by the highest type of nursing by which the patient gathers courage and repose from the attitude of the physician and nurse. The circulation in the brain may be favored mechanically by posture, by saline infusion and by pressure upon the cutaneous surfaces. The latter may be done by bandaging or by a pneumatic rubber suit. The latter exerts a greater influence upon the circulation than either gravity or bandaging and is under much better control at all times. The loss of heat should be counteracted as soon as possible in the usual way. A quiet room and a quiet reassuring nurse are important aids in the treatment of shock.

The treatment of hemorrhage is virtually the same. Repeated saline infusions and the methods for favoring the circulation in the brain are as important in the treatment of hemorrhage as of shock. Adrenalin chlorid in 1-25,000 salt solution, given subcutaneously, as Brewer has reported, or in extremely grave cases given intravenously exerts an immediate influence upon the circulation that is beyond comparison with any other known drug or method. This drug should receive further careful study and observation. It should be borne in mind that as long as large doses are used cardiac collapse may follow.

DR. H. N. VINEBERG.—I heartily agree with Dr. Crile's position as to the uncertainty of the methods used in hospitals to overcome shock.

One of the things to bring forward to-night should be the method of differentiating between shock and hemorrhage. Everything that Dr. Crile has told us has been founded on extensive and excellent work that he has done in a large series of animal experimentation. Still we, who are doing a great deal of surgery must go on to a certain extent with our own clinical methods. Unless my observation has been entirely at fault I have seen cases in which the subcutaneous injections of nitroglycerin were a great aid in determining whether or not the patients suffered from shock.

Every operator with any extended experience will recall several instances when he has been in great doubt as to whether the alarming symptoms present in his patient some hours after an operative procedure were due to shock or to intra-peritoneal hemorrhage. Thus far in my operative work I have been so fortunate as not to have had any instances of postoperative hemorrhage, with a single exception. The hemorrhage in that case came from a vaginal wound made for the purpose of drainage in a case of laparotomy for diseased adnexa. The hemorrhage was not concealed and the house surgeon arrested it in a suitable manner before I had time to reach the hospital. I am not in position, therefore, to dilate upon the points of differentiation between post-operative shock and concealed hemorrhage. Still, I have, on more than one occasion, stood at the bedside of an operation case for one or more hours, in a perplexed state of mind, as to whether the low condition of the patient was due to shock or to intra-peritoneal hemorrhage.

I recall one case in particular a couple of years ago in which I did in the afternoon a ventro-suspension and resection of an ovary. About midnight I was notified that the patient was pulseless. The patient was a rather delicate spinster with more or less of a neurotic temperament, and who had been anemic before the operation. She now lay in bed in a condition of apathy, with a pulse that was barely perceptible at the wrist. It was difficult to say whether the anemia was more marked now than it had been before the operation. A surgeon who was interested in the case and who was present at the operation observed the patient with

me and showed the same doubt as to whether internal hemorrhage or shock was present. The absence of any abdominal distention—in fact, the abdomen was markedly concave—the improbability that hemorrhage could follow the operative procedure carried out, kept me from reopening the abdomen. After applying various stimulants for a couple of hours, the pulse increased in volume, the apathy grew less, and thereafter convalescence progressed satisfactorily.

My experience with cases of severe loss of blood within the abdomen is limited chiefly to those of ruptured ectopic pregnancy. In these cases, however, it seems to me we have a complex clinical picture; that due to great loss of blood, and that due to shock. That the low vital condition present in these cases is in part due to shock caused either by the blood impinging upon the general peritoneal surface or by pressure upon the diaphragm is evidenced by the fact, noted in many instances, of a noticeable improvement in the patient's general condition as soon as the abdomen is opened and the pressure is removed. I have never witnessed in these cases the tossing of the arms and the crying for air, the classical symptoms of profound hemorrhage as given in the text-books. As a rule, the patients are more or less apathetic, with blanched mucous membranes and with a pulse so small and irregular that it cannot be counted.

Some writers, notably Boise of Grand Rapids, Michigan, lay great stress upon the presence of "livid anemia" in shock and "waxy anemia" in hemorrhage. This distinction does not seem to be a very practical one. To my mind, what makes the differentiation so extremely difficult at the bedside is that we usually have a combination of conditions. We have the effects of more or less loss of blood at the time of the operation, combined with those of shock due to the manipulations, together with the symptoms following a more or less prolonged anesthesia.

As far as my experience teaches me, I would say that when the abdomen is not distended but, on the contrary, is markedly concave, and a noted improvement in the pulse is observed after the hypodermic injection of nitroglycerin the case is one of shock. On the other hand, I would fear intraperitoneal hemorrhage if the abdomen were distended, especially the lower half, and if nitroglycerin given hypodermically was followed by only a fleeting improvement in the pulse. I must frankly admit that I know of no signs or symptoms to differentiate the manifestations of severe shock from those of internal hemorrhage.

It was only the other day that I operated upon a young woman in fairly good condition for diseased adnexa with rather extensive pelvic adhesions. The right adnexa were ablated entire and on the left adnexa conservative surgery was done. There was very little loss of blood, but as there was considerable oozing from the areas of adhesions I packed the pelvic floor lightly with gauze. The entire operative procedure, including the curetting and the scrubbing of the abdomen and vulva, did not consume more than

an hour. The patient was very timid, resisted vigorously the taking of the anesthetic, and the anesthetizer had considerable difficulty with her throughout the whole narcosis. During the operation and at its end the pulse was of good quality. All of the afternoon (the operation was performed at 10 A.M.), the condition of the patient seemed critical. She was very much blanched, her face was cold and covered with clammy perspiration, the pulse was very great, at times scarcely to be felt in the radials, and ranged from 120 to 140. Had it not been for the presence of the gauze pack protruding through the lower angle of the wound, the whole picture, with one exception which I will mention later, would have impressed me as denoting internal hemorrhage. The exception to which I referred was the marked concavity of the abdomen. This to my mind is a valuable point of differentiation between pure shock and intra-peritoneal hemorrhage. I will refer to this again.

When Crile's and Cushing's valuable experimental and clinical work on blood pressure in shock and in surgery were presented to the profession, it was thought that we would have a ready means of determining, by measuring the blood pressure, whether we had to deal with shock or with hemorrhage. The careful clinical investigations, however, of Faulkner Stone and Murphy of Boston carried out at the instance of the Harvard Medical School, have rather shattered this hope. They state that in cases of surgical shock the low blood pressure observations serve as a rule only to confirm a diagnosis already made by the physical examination of the patient. In a few cases the evidence obtained by blood pressure observations appear to be misleading. In hemorrhage the condition of the patient as estimated by the pulse, respiration, temperature, and general appearance seem to be more valuable than the pressure observations. Nevertheless, inasmuch as the blood pressure is concededly low in marked shock and as these observers found the blood pressure notably high in some cases of hemorrhage the field is worthy of more extended observation.

DR. J. RIDDLE GOFFE.—I feel that I am in the same position as Dr. Vineberg said he was, following a man who has given so much time and thought to this subject as Dr. Crile has and whose work has been attended by such brilliant results.

My own opinion in this matter is that it is not simply a question of the blood vessels, but that we must look beyond them to the nerve centers if we are going to reach the ultimate origin of the condition. I find that different authors give different definitions of the term shock. The old theory was that shock following operations was due to paralysis and the whole trouble was due to paralysis of the heart, of the blood vessels and of the sympathetic system. To me the most satisfactory definition of shock is that of Eugene Boise of Grand Rapids which he gave at the 1901 meeting of the American Gynecological Society. He says: "When we regard surgical shock from the standpoint of

the clinician and when we reason from physiological facts which are beyond dispute to the conditions which we see in shock, we are forced to the conclusion that the true pathology of noncomplicated shock is a hyperirritation (a spasm) of the entire sympathetic system." That is a tetanoid condition and not a paralysis and this explains satisfactorily, in all its manifestations, the condition of shock. Take the symptoms of shock, with the small, rapid and feeble pulse, we can account for that simply on the ground of the theory of tetanoid condition, or hyperirritation of the sympathetic nerve centers. By action on the vasomotor nerves the arterioles are contracted and the channels for the blood are greatly reduced. The pulse is one of low pressure because the heart is in a condition of spasm; it has contracted to a definite degree and does not allow the blood to get into it and, therefore, when it contracts, it contracts on such a small amount of blood that the pressure is small.

Dr. Crile has asked the question: "Where is the blood?" The blood is in the internal blood vessels. In the vaso-motor system, there is a compensating coordination of the action between the vasodilators and the vaso-constrictors. If the vaso-constriction of the arteries is stimulated, the vaso-constrictors of the veins become relaxed and we have an accumulation of blood in the internal vessels. Now, why is it that you see the patients in shock suffering from cold perspiration but not in hemorrhage? We do get it in hemorrhage but only when shock supervenes or accompanies the hemorrhage. In pure shock the cold clammy perspiration is present, and this is not due to the blood pressure, but due to the effect upon the nerves. We have a system of nerves which stimulate the secretion of the sweat glands, and if the center from which these nerves come be stimulated we get a stimulation of these glands and they will pour out the perspiration, cold because of reduced circulation.

There is a difference in the color of patients in cases of extreme hemorrhage and extreme shock. All authors speak of the pale waxy color of hemorrhage; in shock it is a livid color and is the result of venous congestion. The mucous membrane has a leaden color while the nails remain purple. This can only be explained by the action of the vaso-dilators causing a dilatation of the veins. At the same time there is a diminution and even suppression of urine and this is explained on exactly the same principle. We know the kidneys have no nervous supply which controls the secretion of urine; the kidneys are simply "strainers." If the blood pressure is lessened because the arterioles are contracted and because of the limited action of the heart, there is a diminution in the quantity of urine strained through the kidneys and all due to lack of blood pressure. We have all seen, in cases of extreme shock, a relaxation of the sphincters and involuntary movements of the bowels and this finds satisfactory explanation in the theory of spasm. There is a stimulation of the sympathetic system, a stimulation of peristalsis, and the contents of the intestines are

forced along. The sphincters are relaxed and afford no control because the arterioles of the cerebellum in conformity to the stimulation of the vaso-constrictors is suffering from blood hunger and has not sufficient functioning power to control the sphincters.

With regard to the treatment we must remember that very frequently patients get well without any treatment and again regardless of any treatment we may use. We may work along the theory of paresis or the theory of tetanoid condition, and yet we may use the same treatment. I think that Dr. Crile has set forth the true treatment here to-night. The treatment should be a sedative one and not one that stimulates, because we want to obtain a quieting influence, and try to sooth these vaso-motor centers and regulate through them the blood supply. This is best accomplished by the use of heat; proceed by injecting into the veins hot saline solution. I am a great believer in this form of treatment for shock. I do not rely upon hypodermoclysis, but inject the fluid directly into the veins, and I know of nothing so soothing as heat introduced as hot as it can be borne. In the bag it is from 118 to 120 degrees, and by the time it gets to the veins and nerve centers it is not too hot.

Regarding the use of nitro-glycerine, I believe it is a good drug; it relaxes the arterioles, and, in that way, is a good agent to use in conditions of shock. This drug should be pushed to the extreme physiological effects. This same thing can be said of strychnin. In small doses strychnin is a stimulant, but in large doses it acts as a sedative. Under its use we have seen the pulse slow down and become dicrotic when large doses have been administered. In shock I frequently use 1-10 of a grain and repeat it at intervals of one, two or three hours. Morphin I believe to be the sheet-anchor in shock, and I give it freely. Hot saline solutions introduced directly into the veins, large and repeated doses of morphin, is the best treatment, in my opinion, for shock.

DR. LEROY BROWN.—This subject could be best taken up under the natural heads of Recognition, Avoidance, and Subsequent Treatment.

Recognition.—As a result of a progressive loss of a considerable amount of blood certain well known symptoms follow: 1. An increasing quickening of the pulse attended by a progressive diminution in volume, when before the character was good. 2. An increasing pallor, especially of the conjunctiva. 3. An increasing restlessness, the patient throwing the arms and legs from side to side. 4. A quickened sighing respiration with the extraordinary muscles brought into play. All of these symptoms were familiar to each of us, and with them plainly before us there was no doubt as to what to do, and what remedial measures to institute. Our path was, however, not always so plainly cut out to us as at times in grave doubt as to whether the increasingly enfeebled pulse was due to profound shock, or collapse from the escape of blood, when the operation had been of sufficient gravity to cause shock. The task of recognizing an additional collapse as the result of bleeding

was once surrounded by many uncertainties, taxing to the utmost the judgment of any operator and at times impossible to determine except by an exploration.

In order to avoid as far as possible the occurrence of such uncertainties it had been his habit before closing the abdomen to know by sight that each pedicle was dry, and that all oozing surfaces were taken care of. When the patient was taken to her bed it was necessary that the condition of the pulse and conjunctiva be noted at once and recorded; such a knowledge was of much importance in observing subsequent changes.

Delayed hemorrhage coming on some days after the abdominal section was of rare occurrence. In addition to the sudden change of pulse from one of good quality to that of increased rapidity and of thin character there was a marked abdominal pain at the time of the hemorrhage. Kerley cited such a case occurring nine days after an abdominal section. The patient was in excellent condition when the attention of the nurse was called to her by evidences of great abdominal pain, the conjunctiva and face were blanched and the pulse primarily good was thin and rapid. She was immediately removed to the operating room and the abdomen reopened. Profuse intra-abdominal hemorrhage was found, coming from one of the pedicles. The occluding clot had from some constitutional cause been absorbed. The patient recovered. Two such occurrences had happened with patients under his care at the Woman's Hospital; both took place in the second week following vaginal hysterectomy. In each instance the attention of the nurse was called to the bleeding by the patient who felt the unusual vaginal discharge and made investigation themselves. A secure vaginal packing was sufficient to control the hemorrhage in each case. In order to recognize the changed condition brought about by hemorrhage whether concealed or otherwise it was important to be familiar with the condition of the patient's pulse, the color of the mucous membranes, and the general condition of the patient at the time that she was returned to her bed from the operating table. Such a knowledge as a starting point was of imperative necessity in relieving our minds of many uncertainties, especially in cases where the operation had been one of much severity. The knowledge that all bleeding points had been secured so thoroughly as to preclude any possibility of an early bleeding was also of primary importance. The habit of extreme care in ligating vessels, and the use of that admirable device of Dr. Crile, the pneumatic rubber suit for counteracting shocks supplied us with the two best agents possible for the prevention of shock and for sustaining the patient through the period of blood pressure attendant on shock.

The cause of secondary hemorrhage is, in the majority of cases, an insecure tying of pedicles. It is not my desire to attempt to lay down any fixed rules for ligating stumps—certainly not before men of years of operating experience—yet I may be permitted to

call attention to some of the possibilities inviting a slipping of ligatures.

1. In removing a diseased ovary and tube the entire pedicle is sometimes made into one mass stump. The portion of the broad ligament nearest the lateral wall of the pelvis is brought up to that portion nearest the horn of the uterus, and the whole tied in one mass. The ligature rests on the apex of a cone, the base of which has a tendency to retract back to its normal position. It is better to tie the distal portion of the ovarian artery in one ligature, and that portion near the horn of the uterus in another ligature; the intervening tissue between these two ligatures consists of layers of the broad ligament in which there are no bleeding vessels. These layers can be whipped over in order to avoid raw surfaces.

2. It is safer to include small amounts of tissue in the ligature, and to avoid at all times the surrounding of much tissue by one or more ligatures. The nearer we approach to tying the individual vessels the surer are we of having complete and permanent hemostasis on account of lacerating the coats of the vessel. Vessels occluded by a ligature surrounding a large mass are pressed in only, and their walls are not lacerated and an early dissolving or loosening of the ligature may liberate the occluding clot. When it is necessary to include considerable tissue in one tying, it is prudent to pick up the vessels protruding from the cut end of the stump and tie them individually.

3. In removing a diseased ovary and tube by a bunched pedicle or tying the uterine artery in the process of doing a hysterectomy, the free edges of the pedicle are at times uncomfortably close to the ligature. There should be at least one-half an inch of the cut end of the pedicle beyond the ligature. In using catgut as a ligature, and I always use it, it is well to bear in mind that two knots alone are not quite safe, since in the process of softening, the catgut untwists and the second knot becomes loosened. Three knots are considered better and for the same reason it is better to leave the cut ends of the ligature at least half an inch or longer.

I wish to apologize for taking up your time in referring to these elementary topics, yet it is necessary in discussing the avoidance of secondary hemorrhage.

There is a form of ligature which has never received the adoption I think it deserves. I speak of what is known as the Grad knot. It is a knot used largely by lumbermen and first brought to the attention of surgeons by Dr. Grad while a house surgeon of the Woman's Hospital. I use this form of ligature a great deal and am saved much time and annoyance by its use. It is as follows: A needle armed with a sufficient length of catgut is passed through the pedicle and is at once passed through a second time near the place of its first entrance. Passing the needle through a second time forms a loop over the pedicle, and this loop is held slack by an assistant. The free ends of this ligature are tied in one knot. Before this knot is tightened one free end

is slipped under the loop and the knot is now drawn home firmly. The loop following it down overlies this first knot and binds it strongly. The other two knots are now tied and your pedicle is secure. There is no slipping or loosening of the first knot in this form of ligature. The necessity of having an assistant hold the first knot is done away with, and at least five minutes is saved during an operation by the use of this form of ligature.

In using saline infusion in patients after hemorrhage I have for some time given up intravenous method in favor of the subcutaneous, and find this later method very much more satisfactory. By this means one can introduce into the connective tissue of each breast and axilla from 10 to 16 ounces in as many minutes. It is surprising how rapidly it is taken up by the circulation. On account of the partial elimination of this fluid through the channels of absorbents it becomes necessary at times to repeat this infusion, the guide being the condition of the pulse. For this purpose of subcutaneous infusion I make use of Fowler's apparatus slightly modified to suit my purposes. With this same apparatus intravenous infusion is done if desired.

Collapse following hemorrhage differs from shock, and we may expect to get good results from the use of vaso-motor and heart stimulants.

It has been my good fortune within the last month to study Dr. Crile's admirable work on blood pressure in surgery. Since reading the results of his masterly experiments I will in the future use in all cases of shock and collapse from hemorrhage the pneumatic suit devised by him and, if need be, in desperate cases, adrenalin chloride in the manner in which he finds admissible to pull over the heart.

DR. HENRY C. COE.—When Dr. Crile closes the discussion I would be pleased to have him answer the following questions:

1. What has been his experience with adrenalin in these cases?
2. Does his rubber suit offer any advantages over the use of rubber bandage? With his suit I do not see how he can carry the pressure beyond the trunk.
3. How can pressure exerted upon the surface veins force the blood into the interior?

DR. R. L. DICKINSON.—I should like to ask Dr. Crile what substitute he would use when caught without the suit?

DR. HERMANN J. BOLDT.—I believe a practical point is to put on a tight bandage on the upper surface of the thighs before beginning all operations where we may expect to meet with shock or profuse hemorrhage; then, when through the operation loosening the bandages slowly. This throws the blood which had been dammed in the lower extremities into the general circulation.

DR. CHARLES JEWETT.—The differential diagnosis between intraperitoneal hemorrhage and shock is easily made by opening the posterior cul-de-sac. This can be done without the use of

an anesthetic and, with no added shock, it settles the question of hemorrhage absolutely.

I think we sometimes have to differentiate hemorrhages not only from the shock, but also from the effects of certain toxins which seem to depress the heart out of proportion to their effects on temperature.

DR. HENRY C. COE.—I have not heard any references made to possible cardiac complications. It is a well known fact that certain lesions of the myocardium which are not discovered before operation gave rise to symptoms of shock and sometimes proved fatal.

DR. GEORGE W. CRILE, of Cleveland, Ohio.—With regard to Boise's theory of the pathologic physiology of shock, it is perhaps sufficient to call attention to the fact that an increased tonicity of the blood vessels causes a rise in the blood pressure, whereas in shock the opposite is true. This theory, ingenious though it is, does not seem to harmonize with known physiologic laws.

I must confess that I do not understand what is implied by "tetanoid condition" of the heart.

In reply to Dr. Cole's question regarding adrenalin, I would only say that it is at present in the experimental stage but is a remarkable drug. Its power over the circulation is unquestionable. Theoretically it should be an ideal drug to use in combating shock since it acts only upon the blood vessels' walls, apparently leaving the central nervous system undisturbed. Bandages are useful, but it is rather difficult to exert a uniform pressure by their application. The area of application is also quite limited.

Replying to Dr. Dickinson, would say that I have not seen any case of thrombosis and would never expect to find this condition following the use of superficial pressure. The rubber suit is not used as a routine measure but only in the cases of marked gravity. In closing I would like to suggest that since men of equal authority and prominence advocate opposing methods of stimulation, a trial be given to the negative plan in ward cases along with others in which every stimulant is used. It is rather striking at times to see how attenuated the thread of life may become and yet be not quite broken in the case in which no therapeutic violence is given.

TRANSACTIONS OF THE NEW YORK
ACADEMY OF MEDICINE—SECTION ON
OBSTETRICS AND GYNECOLOGY.

Meeting of March 24, 1904.

DR. A. PALMER DUDLEY *in the Chair.*

DR. P. A. HARRIS reported a case of

RECURRENT ECTOPIC GESTATION.

Mrs. A. R., æt. 26. Two children. No miscarriages. Last child born seven years ago. Recovery good.

Arrived at the hospital, May 20th, about 9 P.M., from Dr. Banta. On account of her very low condition, she was at once taken to the operating-room. Pulse was so weak it could scarcely be counted at the wrist. I saw the patient a few minutes after admission and advised operation. Patient declined. Whereupon I told her she would not live unless immediately operated upon. She refused to be operated upon until she could see her husband. A few minutes afterward her husband arrived at the hospital, and saw her in the ward where she had been sent from the Operating Pavilion. After seeing her husband she consented to an operation.

She was so weak when returned to the Operating Pavilion that 425 cubic centimeters of normal salt were thrown in the veins prior to opening the abdominal cavity. After closing the abdominal cavity, 650 cubic centimeters more of normal saline solution were thrown in the veins.

The abdomen was filled with blood and clots, and from it was removed a fetus measuring about ten inches in length. The patient made good recovery.

Notes of case transcribed from the hospital history:

The patient menstruated every four weeks after leaving the hospital, ten months ago, to and including January the eighteenth, 1904. On February the eighteenth, menstruation again appeared, which contained clots. From that date, February the eighteenth, until her admission to the hospital, blood has appeared almost daily from the vagina with some clots. On March the seventeenth, she lost a large amount of blood, very dark in color. Menstruation was comparatively painless since recovery from her previous tubal pregnancy, until February the eighteenth, 1904, when the appearance of blood was attended with severe pains in the hypogastric region, more especially upon her left side. However, they were not so severe that she did not remain on her feet

and attend, although with difficulty, to her household duties. These pains recurred almost daily, until March the 12th, or 13th, when Dr. Banta first saw her. She then had moderately severe colics, and a slight escape of blood from the vagina. Upon Dr. Banta's advice, she remained in bed for a few days. The colics continued, although not so severe.

Tuesday, March the twenty-second, while dressing, she was seized with very severe pain in the left lumbar region, the pain extended across the abdomen. She felt dizzy, but did not fall. She was again seen by Dr. Banta who sent her to the hospital.

Physical Examination.—Cervix rather soft and velvety. Uterus fixed in its position with a tumor above and to its left.

Operation.—Yesterday, March the twenty-third, I performed an abdominal section; I found a pint or two of blood in the abdominal cavity, some of the clots were partly organized and very adherent to omentum and intestines. The left tube was about eight inches long, about one inch and three-quarters in diameter, closed at the ostium abdominale, and believed to contain the product of an interrupted if not progressive pregnancy. At the posterior surface of the tube, when adhesions were separated, very bright arterial blood escaped from a perforation as large as a pinhead. After removal of the tube the blood continued to pour from this perforation in the wall of the tube and had the effect of making the tube somewhat smaller than the size just given. I exsected this tube, closing the chasm in the uterus with sutures. I found the isthmian portion of the right tube larger and somewhat harder, nodulated and altered in character and appearance since the operation of ten months ago. I also exsected it, closing the chasm of the uterus with catgut stitches.

It was the desire of the patient, and I felt that her interest would be better subserved by leaving her in such condition that pregnancy would not again be possible. Thus I believe, that we have unmistakable evidence of the recurrence of tubal pregnancy in this individual.

At the last meeting of the Academy of Medicine, I stated in discussion that I had then met with five women in whom tubal pregnancy had recurred. To that I now add another, making altogether six cases of this class.

DR. A. BROTHERS asked how frequently recurrent double tubal pregnancy occurred. In his own limited experience he had had about 40 cases, all primary, and he had never seen a case of recurrent tubal gestation.

DR. HERMANN J. BOLDT said that apropos of the point in diagnosis of ectopic gestation he wished to speak of a case operated upon by him in which he thought he found an unruptured tubal gestation of the right side. Upon opening the abdomen he found that the tumor which was believed to be an unruptured tubal gestation was an ovarian cyst with hemorrhage in the right wall of the tumor. As a matter of fact the tubal gestation was on the left side and an abortion had taken place. This was a condition

he believed to be quite rare. There was not a large amount of blood in the peritoneal cavity because the abortion had taken place two weeks or more previously and without any marked symptoms. There were probably two ounces of dark fluid blood in the pelvis and over the peritoneal surfaces. In the tube itself was presented a hard body which proved to be a firm clot and he was not sure whether it was a placental polypus or a clot of blood.

He had had as many as five or six recurrent tubal gestations. In one patient, at the time of the primary operation, he found the opposite Fallopian tube inflamed and he thought of the possibility of a recurrent attack happening. The patient did come to operation a second time, falling into the hands of Dr. Polak, within one year.

DR. JOHN O. POLAK reported the case of a woman who had been perfectly regular in her periods until last January. She menstruated January 10, 1904, and then skipped February 11. She had had three children prior to this and never had any intercurrent disease. Suddenly on the morning of March 1st she was seized with sharp pain in the left side, not severe enough to cause collapse, but severe enough to cause her to lie down. At 4 P.M. of the same day she was seized with severe pain on the right side, with some spotting and collapse. A diagnosis of tubal pregnancy was made from the condition of shock, high pulse rate and the history given. She was operated upon and a ruptured interstitial tubal pregnancy on the left side and a ruptured tubal pregnancy on the right side were found. Both were primary ruptures and had occurred within six weeks of the supposed conception and within six hours of each other. The patient died from continued shock twelve hours after operation.

DR. P. A. HARRIS reported a case of

HEMATOMA OF BOTH OVARIES.

Patient æt. 39. No pregnancies. Menstruated every month from the age of fourteen. For the first fifteen years of menstrual life the flow lasted a full week. For the last few years, the flow has not continued more than three or four days. In the beginning of her menstrual career, she had slight pain with menstruation. But for the past ten or twelve years, she has had gradually increasing dysmenorrhea, with the worst pain on the fourth day, and a continuance of the pain for two or three days after the cessation of the flow. This patient was first seen in May, 1903. For the past year she fatigues easily. Except for the two or three days following menstruation, she never suffered from pelvic discomfort until about August, 1902, when she began to have pain in the sacral region and through the pelvis. She was rarely without this pain, until seen and operated upon in April, 1903. At that time I removed by abdominal section the left ovary which was the seat of a hematoma. The walls of the cyst were from one-eighth to one-quarter of an inch thick, and the diameter of the cyst was about four and a half inches. It

was filled with very dark almost black blood, and some formations of blood were so hard that when dropped in the specimen basin, they produced a metallic click. I excised this left ovary, which I exhibit to you. On finding that the right ovary was about six times its normal weight and constituted a cyst with rather thick walls, I split it open, turned out the blood which bore the same appearance as that which was contained in the left ovary. I wiped the cavity with pure carbolic acid, and afterwards neutralized it with alcohol. I then sewed the incised portion of the cyst together, and removed a small subperitoneal fibroid of the uterus, which concluded the operation.

Before operating upon the patient, she had obtained my promise that I would neither remove her uterus, nor both ovaries. Considering her age, thirty-nine, I would have removed her right ovary as well as her left, if I had not promised to comply with the patient's wishes in this relation. The patient has been very greatly improved by the removal of her left ovary, but she still suffers to some extent with pain in the region of the right one. I cannot say, however, that there is any material increase of its size since she was operated upon by me ten months ago.

Apoplexy or hematoma of the ovary of such magnitude as the specimen presented is certainly of very infrequent occurrence.

It has been asserted that one effect of chronic apoplexy of the ovary is to destroy the stroma of that ovary. The case which I present, had the condition of hematoma in both ovaries, and it had probably existed in both ovaries for many years without inducing the menopause. For the last ten years or so, the duration of every menstruation has been but three or four days, while in her earlier menstrual life it lasted a full week. The shell which was all that remained of her right ovary, has not only been sufficient to insure the continuance of menstruation, but the duration of the flow has been somewhat lengthened and its quantity increased. I incised and cauterized its cavity since.

DR. HERMANN J. BOLDT recorded a case of

EXTENSIVE PRIMARY PERITONEAL TUBERCULOSIS. TUBERCULOUS OMENTUM, FALLOPIAN TUBES AND OVARIES.

M. B., æt. 42 years; married 25 years; 9 children, the last 2 years ago; menstrual history negative. Present illness 8 months, consisting of pain in the abdomen and increase in its size. Increase of abdominal pain whenever the patient had a movement of the bowels. Obstinate constipation. During the two weeks prior to the woman being seen in consultation (on March 14) she has lost much in flesh and strength. Present condition: The abdomen is greatly distended by ascites; on palpation a tumor with smooth walls is felt most distinct to the left and on a level with the umbilicus. Its boundaries cannot be mapped out because of the presence of ascites. The uterus is not increased in size and seems mobile to some extent. The adnexæ are not palpable. On opening the abdomen a large quantity of dark gray-green-

ish purulent fluid is evacuated, likewise numerous masses of gelatinous material. After evacuation of the fluid a smooth tumor wall presents itself, which is of a light reddish color and most prominent in the abdomen above the pelvis. It looked like the sac of an ovarian tumor. It proved, however, to be a sac of pyogenic membrane which enclosed the entire viscera. Before it had been broken through no part of the bowels was visible. On opening this sac the intestines came to view; they were thickly studded with small tuberculous nodules, and the bowels throughout were intimately adherent with each other. It required about an hour to break up the adhesion of the intestinal tract, and everywhere similar tuberculous nodules were found. About two inches of the descending colon was denuded of its peritoneum and muscularis, which was subsequently covered with interrupted catgut sutures. Much bleeding ensued when the adnexæ were enucleated, so profuse that tight tamponade became necessary. No ligatures could be applied anywhere during the operation, because of brittleness of the structures. The entire omentum was rolled up in a tumor like mass above the transverse colon. It was amputated with a Paquelin cautery. Abdomen closed in its upper part. The gauze was removed on the fifth day. The patient is making a smooth recovery from operation, although it is not likely that her disease will be cured, because of its great extension. Râles are present over the lungs, but no evidence of bacilli is present in the sputum. The peritoneum was undoubtedly primarily affected. Laboratory examination proved tuberculosis of tubes, ovaries and omentum.

DR. BOLDT also showed the following specimens:

INFLAMMATION ABOUT A MECKEL'S DIVERTICULUM RESEMBLING
AN APPENDICITIS.

This patient was a married woman, 24 years old, who had had two children. Her present illness was supposed to have lasted two months. The principal complaint was of pain in the right iliac fossa, but, later on there was also pain, sometimes even more severe, on the left side. Menstruation was not regular, occurring at intervals of from 2 to 3 weeks, and being very profuse. Profuse leucorrhea and frequent micturition were also present. Examination led to a diagnosis of metroendometritis, bilateral salpingo-oophoritis and catarrhal appendicitis. The left tube and ovary were greatly enlarged, and there was severe pain on moderate pressure over the cecal region. On opening the abdomen after the curetting had been done, the intensely inflamed adnexæ were treated conservatively by breaking up the adhesions and straightening the Fallopian tubes which had become distorted.

In looking for the appendix, Dr. Loughran, the house surgeon, who did the operation with the assistance of the speaker, brought up out of the wound what he at first thought to be the inflamed vermiform appendix. A small pus pocket had formed beneath the adhesions of the intestines, which was construed to probably

be a peri-appendicular abscess. On inspection of the supposed vermiform appendix, it was seen that the condition was really one of a large diverticulum, so closely resembling an inflamed appendix, that it could not have been distinguished from one had it not been for the small intestine. The bowel showed evidence of acute local peritonitis, and it was therefore quite reasonable that symptoms of appendicitis should have been present. The diverticulum was removed, but, the appendix being normal, it was not taken off, much time having already been spent in the operation which was difficult technically. The patient had so far not had any unfavorable symptoms.

UNUSUALLY LARGE SUPPURATING TUBERCULOUS TUBO-OVARIAN
TUMOR REMOVED WITH THE UTERUS. TUBERCULOUS
PERITONITIS. RECOVERY.

The patient had been complaining of abdominal pain for about two years, and, even before the beginning of the pain, had noticed some enlargement of the abdomen. Menstruation had been more profuse than when in health, and of longer duration. On examination, it was found that the left lower abdomen was more prominent than the opposite side, being filled by a tumor which reached above the level of the umbilicus. The growth seemed quite adherent and somewhat sensitive to pressure, and the uterus intimately connected with the tumor. There was present a pronounced leucocytosis, and an elevation of temperature to 99.5° F. The diagnosis of a suppurating ovarian cyst was made. On opening the abdomen it was found that the broad ligament was spread out by the cyst, which was intimately adherent with the uterus and the entire pelvis on the left side. Small tubercles were scattered over the parietal and intestinal peritoneum. There was no effusion. Whether the tumor was the primary tuberculous condition, or whether its tuberculous change was secondary to the tuberculous peritonitis, was a question not determined. The other tube and ovary were but slightly enlarged, but they too were studded with tubercles. The uterus was removed to insure good drainage per vaginam, the oozing surface in the pelvis being quite extensive. The sac wall was very thick, measuring 1 to 1½ cm. There were no alarming symptoms at any time during convalescence.

FIBROSARCOMA OF OVARY.

The patient from whom this specimen was taken was 28 years old. She had no other complaint than a constant pain in the right iliac fossa, which had been diagnosed as appendicitis by her family physician, and appendectomy recommended therefor. No menstrual disturbance was present. Examination revealed the presence of a seemingly solid tumor of the ovary, which was thought to be a dermoid. The operation was simple. Examination of the specimen proved it to be a fibrosarcoma.

VAGINAL HYSTERECTOMY FOR UNCONTROLLABLE UTERINE BLEEDING.

The patient was 38 years old, had been married 6 years and had had one child, 5 years ago. She had been curetted 13 times during the past three years for meno- and metrorrhagia. Several times the scrapings had been examined microscopically, and reported to show the presence on an adenomatous endometritis. Both ovaries were sensitive to touch on bimanual examination. The extirpation of the organs was resorted to, because, with such frequent recurrences of adenomatous proliferation of the endometrium, practical experience had shown that malignant disease was the usual outcome. Further, the patient declined to be repeatedly curetted with an unsatisfactory result and, at her time of life, there could be no hesitation in doing a radical operation, especially with a palpable change in the adnexa. The latter were both much enlarged. It should be the rule the speaker said under similar circumstances to extirpate a uterus; the experience of many having shown that it was not desirable to place too much faith upon the report of the microscopical examination.

EXTENSIVE RUPTURE OF A TUBAL PREGNANCY AT THE TENTH WEEK OF GESTATION.

DR. BOLDT said that one would think that after so much had been written upon the subject of extrauterine pregnancy, every practising physician would at least recognize suspicious symptoms pointing in that direction, if an opportunity were given to see such patient several times prior to the occurrence of a rupture. The patient was 26 years old, had been married 9 years and had not previously been pregnant. She supposed herself to be pregnant 10 weeks, a supposition said to have been confirmed by two physicians. At the time of her expected menstrual period she had abdominal pain and a dark, dirty, bloody discharge. At the second period the discharge was associated with more severe cramp-like pain. For several days prior to the speaker's seeing her in consultation, the presence of intense gastrointestinal symptoms led the attending physician to make a diagnosis of toxemia. The rupture took place, judging from the history given, about five hours before the consultation. The diagnosis was at once made, and the woman, who was pulseless and in collapse, was operated upon as soon as possible thereafter. The surgical work required scarcely five minutes for completion, the bleeding tube being secured in a fraction of a minute, yet despite all efforts the woman died immediately thereafter.

RETROPERITONEAL ABSCESS SIMULATING A PYONEPHROSIS.

DR. A. STURMDORF presented several specimens. The first was a kidney removed by nephrectomy from a woman of twenty-six, who had been married six years and had aborted at four months, two years ago. She had had two severe attacks of suppurative appendicitis, which had been treated simply by cutaneous in-

cision by the attending physician. When first seen by him last May, there were pain and tenderness in the right inguinal region, and examination showed suppurative disease in the right side of the pelvis. Operation revealed a long sclerosed appendix, whose tip was adherent to the abdominal wall, and there was an abscess involving the right tube and ovary. She recovered from the operation and did well, but returned some months later in a septic condition. An explorative operation by Dr. Kakels during Dr. Sturmdorf's absence revealed what was supposed to be a very large suppurating kidney, and, for the first time, after this operation pus appeared in the urine. Six hours after the operation the pulse and temperature were normal, and her general condition was fair. The urine was turbid and albuminous. Some of it was passed through the urethra, and some through the operation wound in the back. The urine from the incised kidney was normal except for pus. There was no evidence of tuberculosis. The ureter was evidently occluded and could not be made patent. The functional activity of the other kidney having been determined, the injured kidney was extirpated by Dr. Sturmdorf. What had closely simulated a pyonephrosis proved to be nothing more than a retroperitoneal abscess, surrounding and inclosing the perineal connective tissue.

UTERINE FIBROID. SARCOMA OF THE UTERUS.

These two specimens were next presented. They were taken from a woman and her daughter respectively. The small globular fibroid was enucleated for a dysmenorrhea and menorrhagia which incapacitated the daughter from transacting her business. The scar was scarcely visible, and the result was in every way satisfactory. The mother was forty-four years of age, and sought relief from an enormous ventral hernia the result of an appendicitis operation, done in one of our large hospitals four years previously. A large, hard mass completely filled the whole pelvis and extended up to the umbilicus. The urine was loaded with pus, and her heart was very weak. The enucleation was extremely difficult and tedious, the adhesions being almost universal. The tumor was firmly impacted in the pelvis, and there was a large pus tube on the right side. She stood the operation fairly well, but succumbed on the second day. The sarcomatous nature of the growth had been determined by examination.

HEMORRHAGIC SACTOSALPINGITIS.

DR. STURMDORF said that, given a tube with an occluded abdominal ostium, many factors, both local and general, were capable of producing hemorrhage into its lumen. The specimen was removed from a widow, whose last child had been born ten years previously. The specimen was typical; both ostia were occluded and the central cavity was divided by septa into several pouches. At the time of the occurrence of a menorrhagia three years ago

the patient probably had a salpingitis of a mild type, which occluded both ostia, producing the pyosalpinx.

DR. EGBERT H. GRANDIN opened a discussion on peritonitis by reading a paper on the treatment of

POST-OPERATIVE PERITONITIS.¹

DR. ROBERT MURRAY confined his remarks to post-puerperal peritonitis and said that this, like all forms of peritonitis, was due to sepsis, or the introduction of virulent bacteria at the time of confinement, and that this should be differentiated from the other attacks of peritonitis, *i.e.*, the peritonitis due to operation, to perforation of intestines, rupture of appendix, or ulcer of stomach, etc., possibly complicating the puerperium but not due to it, which was done readily by the fact that this particular form resulted from the labor. There was not usually one organ involved, but the uterus, the adnexa, the vagina and external parts, all might be involved in the septic process. He said it was important to note that, in such cases, the condition was not autogenetic, but the poison was introduced by the hands of the surgeon, nurse or some attendant. The virulency of the course of peritonitis was to be determined by the particular bacteria causing the infection and also, in a measure, by the methods of their entrance into the system, whether by the lymphatics, by extension of the inflammation, or by venous absorption, this latter being a questionable means. He was aware that not much could be secured in the way of treatment. If the infection was caused by an extension from the uterus he said that frequently the first and earliest evidences were shown to be the result of uncleanness. If the infection started in the uterus and remained there, and that organ was cleaned out, one would get no further peritonitis unless there was some secondary involvement of other organ or organs when there might happen a salpingitis, or abscess, or local peritonitis.

Puerperal peritonitis was only one of the septic puerperal diseases, and yet it was the one which, in greater or less measure, was a complication of all of them. It might be local or pelvic, or it might be diffuse, and then so severe that the rapidly fatal result left neither time to produce an exudate on the surface of the peritoneum, nor any chance for good to result from treatment. The local variety, or pelvic peritonitis, was often present, the result of leakage from the Fallopian tubes, extension from an inflamed and septic endometrium, from an ovarian abscess, or of extension through the uterine wall by the lymphatics. An exudate may be formed at the sides of the uterus, circumscribed, and may terminate in suppuration, with the formation of a pelvic abscess involving the tubes and ovaries, or again, after some time, it may become absorbed. Diffuse peritonitis resulted from an extension of a pelvic peritonitis, from tears in the vagina or uterus, from a sloughing uterus or pelvic tumor, or from gonorrhea. If the peritonitis occurred early it

¹See original article, page 61.

probably would be virulent; if it occurred late it was generally better borne.

The best treatment was prophylaxis; this meant *cleanliness*. Treatment was considered under three heads: (1) To limit, or do away with the source of infection; (2) to combat the systemic intoxication by supportive measures; (3) to treat such symptoms as might depreciate the patient's powers of resistance to infection, or themselves cause a fatal result. At the first signs of a peritonitis occurring, the external parts should be most carefully examined; then the uterine cervix should be carefully inspected. Then wash out the uterine cavity, thoroughly clean it, and examine with finger. We might determine whether we were dealing with streptococci, staphylococci, pneumococci, or colon bacilli, yet such information did not give us practical points for working. But, if the bacteria found were shown to be streptococci, the uterus should be washed out but not curetted. Clinically and practically all that then could be done was to clean out the uterus thoroughly. Application of the ice-bag was advocated and, if this was not well borne by the patient, the application of heat. If the vagina became boggy, open, break up exudate with finger, and pack the part with gauze; the limiting of the exudate will prevent the carrying of infected material into the peritoneum.

Medically supporting measures include the use of large saline enemata after thoroughly emptying the bowels by a dose of calomel followed by saline laxatives, particularly Epsom salts, to prevent exudate in the peritoneum forming a culture ground for bacteria; the bowels also are prevented from becoming paralyzed, and food is absorbed more readily.

Alcohol, strychnia, and the heart tonics should be used with easily digested nourishing food frequently. If tympanites be marked with vomiting, lavage of the stomach is of the greatest service.

Hypodermoclysis with normal salt solution and intravenous injection are often of the greatest service in sustaining the patient. Fever should be controlled by tepid sponging, or ice bags, not by the coal tar products.

Surgical interference is seldom justifiable.

DR. ERNEST GALLANT continued with a paper on

GONORRHEAL PERITONITIS.¹

DR. S. MARX said that Dr. Grandin's paper was interesting to him and particularly his division of postoperative peritonitis into the parietic or pseudo-peritonitis, the inflammatory and the septic, and also his means of differentiating them. He did not believe the line of demarkation was so fine as depicted.

Some years ago he had used codein in the treatment of peritonitis, but found that it was not as efficacious as had been claimed for it, and lately he had been using opium in enormous amounts

¹See original article, page 65.

following out the teachings of Dr. Alonzo Clark. In the inflammatory conditions he attempted to paralyze the patients with opium.

Regarding the septic form of peritonitis he advocated radical surgical means, opening the abdomen, washing it out, etc., and then using the antistreptococcic serum. In the puerperal cases laparotomy plus the serum did not yield good results with him. He said that something more radical should be attempted in these cases.

During the past six weeks he had seen from 30 to 32 cases of puerperal sepsis, and in not a single instance did he find it necessary to enter and wash out the uterus. There was found in each instance a local exudate in the vagina or the cervix, and this, when thoroughly destroyed, caused a subsidence of the symptoms. These same cases, if seen five or ten years ago, would have been curetted, and this probably explained why, at that time, the mortality was so high. In not a single instance had he found it necessary lately to introduce the hand into the uterus. He believed that if nothing was in the uterus it was not necessary to use the curette; but if something was there it should be removed. He emphasized the importance of a careful inspection of the genital tract. In cases of septic peritonitis following labor the results were bad, and in spite of the use of opium and drainage, etc., a large number of these patients die. He had on different occasions been tempted to do a hysterectomy, but did not, and at the post mortem he found conditions present at variance with what was supposed to be and he then found that such interference would not have saved the patients and was thankful for his non-interference.

DR. HERMANN J. BOLDT in speaking of the differential diagnosis between the suppurative and the puerperal forms of peritonitis said that symptomatically they were practically identical.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

The President, EDWARD MALINS, M.D., in the Chair.

Meeting of April 6, 1904.

FORTY-ONE CASES OF PUERPERAL ECLAMPSIA TREATED BY THYROID EXTRACT.

LIEUT. COL. STURMER, I.M.S., read a short communication on the above subject. Ten grains of thyroid extract was given in each case on admission and five grains every four hours afterwards. Morphia and saline injections were also used in many of the cases. Rupture of the membranes, followed by dilatation of the cervix and the early application of forceps or other means of assisting labor was the usual practice adopted. Under thyroid treatment, the maternal mortality was reduced to 12.2 per cent. It is claimed that the urine after the first 2 or 3 doses showed considerable increase and that by the end of 24 hours the increase was great, whereas with saline injections and morphia alone, no marked improvement usually sets in for 24 hours. It was remarked that most of the cases of eclampsia occurred on dull and cloudy days, when probably the skin does not act as well as usual.

DR. HERMAN considered that increase in the urinary excretion was one of the most trustworthy indications of recovery of the patient: and that, as when thyroid was given the quantity of urine became quickly augmented, this preparation was really beneficial.

DR. BOXALL said that he had recently learnt that eclampsia was unduly prevalent in the West Indies as well as in the East. This was attributed by the local doctor to malarial influence.

DR. OLIPHANT NICHOLSON considered the results of treatment of cases of eclampsia and of impending eclampsia by thyroid extract as very encouraging. In severe cases he always uses morphia in addition.

THE PRESIDENT remarked on the difficulty of determining the value of thyroid extract treatment from a series of cases of eclampsia in which other remedies were at the same time used. He was of opinion that atmospheric conditions often exert a potent predisposing influence in the production of cases of eclampsia.

Specimens were shown by Dr. Tate, Mr. Alban Doran and Mr. Bland-Sutton.

FIBRO-MYOMA OF UTERUS WITH CARCINOMA OF BODY AND FIBROID TUMOR OF OVARY.

DR. TATE, in exhibiting this specimen, emphasized the importance of exploring the uterus in cases of hemorrhage persisting for

years at about the time of the menopause and later, because in these cases malignant disease of the body is a very probable cause of the symptoms.

DR. LEWERS and DR. BOXALL referred to similar cases of carcinoma associated with fibro-myoma which had come under their observation.

DR. PETER HORROCKS called attention to the fact that bleeding from the uterus after the climacteric in a woman known to have a fibroid tumor did not necessarily indicate malignant disease of the uterus as in this case, nor malignant degeneration of the fibroid. Some authorities disputed the possibility of the latter, but Mr. Alban Doran and he himself had shown specimens illustrating sarcomatous changes in fibroid tumors.

Two specimens of

DIFFUSE ADENO-MYOMA OF THE UTERUS

were also shown by Dr. Tate. After remarks from Dr. Stevens, Mr. Bland-Sutton and Dr. F. E. Taylor, these specimens were, on the motion of Dr. Blacker, referred to the Pathology Committee.

DR. BLACKER remarked that they were the first examples of this kind of tumor to be shown before the Society. Further examination would no doubt show that the glandular down-growths were in reality derived from the uterine mucous membrane.

TORSION OF THE PEDICLE IN HYDROSALPINX, AND OTHER MORBID CONDITIONS OF THE FALLOPIAN TUBE.

DR. R. HAMILTON BELL deals first with the literature of the subject. Twelve cases of this rare accident in addition to 41 collected by Cathelin are recorded. A full account is given of a case under the author's own observation. The general problem of torsion of the abdominal viscera is discussed. It is pointed out that the particular conditions necessary to the production of this accident are much more frequently present in cases of hydrosalpinx, than in other forms of tubal disease. Short notes follow on the two varieties of torsion, acute and chronic; the direction of rotation; and the results of the twist. The influence of age and pregnancy is also discussed. The paper concludes with a consideration of the more clinical aspect of the cases. The close approximation of the symptoms to those of a twisted ovarian is recognized, and the fact is noted that a correct diagnosis previous to operation has never yet been made. But it should be at least suggested when the following conditions are present: a fluctuating abdominal tumor of irregular shape, not rising above the umbilicus, associated with paroxysmal attacks of pain, culminating in a very severe attack with vomiting and constipation, and if the tumor has been observed before, increase of size, tenderness, and some loss of mobility. The treatment consists of removal of the twisted tube by abdominal section, and the writer thinks that the other tube should be dealt with conservatively whenever possible.

MR. BLAND-SUTTON regards the diagnosis of this condition as practically impossible. It is a fact that Fallopian tubes when distended with simple fluid, pus, blood, or even when gravid did twist their pedicles, but it is very difficult to even attempt to frame a plausible theory to explain it: this could be attributed in great measure to our profound ignorance of the statics and dynamics of the peritoneal cavity.

DR. McCANN referred to a case of tubal gestation with twisted pedicle which he had published.

MR. ALBAN DORAN considered that diagnosis must be impossible in many cases, and that therefore this condition was often overlooked and commoner than clinical records would lead us to believe. Again, it seemed probable, for mechanical reasons, that it was easier for a tube than for an ovarian tumor to untwist itself after axial rotation. Tubal torsion to any appreciable degree was rarer than torsion of the ovarian pedicle because the dilated tube soon became fixed by adhesions whilst many ovarian cysts did not become adherent to neighboring structures till after torsion.

DR. LEWERS referred to a case of his own of pyosalpinx with torsion of the pedicle.

MR. TARGETT referred to two cases of tuberculous pyosalpinx in which a similar accident had occurred. He thought that in tubercular disease the conditions were specially favorable for torsion to occur, and that practically all cases of pyosalpinx with subsequent twisting of the pedicle were tubercular in character.

REVIEWS.

VAGINAL TUMORS, WITH SPECIAL REFERENCE TO CANCER AND SARCOMA. By A. ROGER WILLIAMS, F.R.C.S. Pp. 92. London: John Bale Sons and Danielsson, 1904.

Tumors of the vagina are comparatively rare and this monograph is a distinct addition to the literature on the subject in English. The solid tumors described are carcinoma, sarcoma, myoma and papilloma. Special attention is given to sarcoma of the vagina in children. Out of twenty-five cases of sarcoma of the vagina, eighteen occurred in infants; one of these was congenital. In the chapter on sarcoma is included primary deciduoma of the vagina, which the author states may be either malignant or benign. The author accepts the explanation of the pathogenesis of the condition that has been suggested by Veit. That is, that the chorionic villi with the syncytium and Langhans' cell layer penetrating the maternal blood vessels are swept off into the maternal blood current. As a rule these fragments are disintegrated and disappear but occasionally find lodgment in some part of the body and develop into a deciduoma. Cysts of the vagina are considered in the last chapter. The book as a whole is most satisfactory. The subjects are treated comprehensively and are illustrated by numerous cases from literature and from the author's own experience. A bibliography accompanies each chapter.

T.

THE MOTHER'S MANUAL: A MONTH BY MONTH GUIDE FOR YOUNG MOTHERS. By EMELYN LINCOLN COOLIDGE, M.D., Visiting Physician of the Out-Patient Department of the Babies' Hospital, New York; formerly House Physician of the Babies' Hospital, Physician-in-Charge of the Babies' Clinic of the Society of the Lying-In Hospital of the City of New York. Pp. 263. New York: A. S. Barnes & Co., 1904.

This book, written for young mothers, is replete with facts of value to anyone who has the care of infants and young children, facts which are not found in more scientific works. They are stated accurately and briefly and in language that is not clouded by scientific terms and that can be easily comprehended by any intelligent person. The work is divided into chapters, one for each month of the first year, one for each half of the second and third years of the child's life. Under each month is given a simple formula for the child's diet and brief statements regarding the development and habits that may be expected and for the care of diseases and conditions that are liable to occur during the month. Some of the diseases should have been described in

separate chapters rather than under certain months. To describe whooping cough under the fourth month and measles under the seventh month will prove misleading to the ones for whom the book is intended.

CASE TEACHING IN SURGERY. By HERBERT L. BURRELL, M.D., Professor of Clinical Surgery, Harvard University, and JOHN BAPST BLAKE, M.D., Instructor in Surgery, Harvard University. Philadelphia: P. Blakiston's Son & Co., 1904.

This book comprises the histories of seventy-five cases, including with each history a blank page on which may be written the diagnosis, prognosis, and treatment as determined by the student. In an explanatory note is described the method of using these case teaching exercises. The instructor reads a history, answers any legitimate questions and after an interval during which the case is silently considered the student summarizes the case, as to diagnosis, prognosis and treatment, the instructor enlarging when it may be necessary. There is a key to the book which will be mailed to instructors who wish it. This method of teaching may find a limited field in the recitation or quiz class, where the authors intended it to be used. As a substitute for clinical instruction or in comparison with it, the method is of no value.

OBSTETRIC AND GYNECOLOGIC NURSING. By EDWARD P. DAVIS, A.M., M.D., Professor of Obstetrics in the Jefferson Medical College, Philadelphia, and in the Philadelphia Polyclinic; Obstetrician to the Jefferson and Polyclinic Hospitals; Obstetrician and Gynecologist to the Philadelphia Hospital. Second Edition Revised. Pp. 402. Philadelphia, New York, London: W. B. Saunders & Co., 1904.

The first edition of this work appeared in 1901. It is divided into two separate parts, of which Part I deals with obstetric nursing and Part II gynecologic nursing. In no class of cases are the responsibilities of a nurse greater than in obstetric cases. The early recognition and prevention of many of the complications and emergencies which may arise during pregnancy, parturition or the puerperal state are dependent on the knowledge and care of the nurse. This work is well adapted to supply the theoretical knowledge required. The book is devoted, as its title would indicate, to the nursing of obstetric cases; nothing or but little of the science of obstetrics is included. A nurse of the present day must have some knowledge of position and presentation, and a chapter on these subjects would have added to the book. The author has been careless in some statements such as "the hands of the nurse made *antiseptic*." In one other place he states the time for sterilization by boiling to be fifteen minutes, in another half an hour. We do not agree with the writer that if directed to give an intrauterine douche "a nurse should refuse to assume so responsible a task."

Part II is devoted to gynecologic nursing, including a nurse's duties in general operative and office work, also in the care and treatment of gynecological cases. We can heartily recommend this book as a text book in training schools for nurses. T.

OBSTETRICS FOR NURSES. By JOSEPH B. DELEE, M.D., Professor of Obstetrics, Northwestern University Medical School; Obstetrician to Mercy, Wesley, Provident, Cook County and Chicago Lying-in Hospitals; Lecturer in the Nurses' Training Schools of Same. Fully illustrated. Pp. 460. Philadelphia, New York, London: W. B. Saunders & Co., 1904.

With the increase in the time to be spent and the increase in the theoretical knowledge required for graduation from nurses' training schools, there has been created a demand for more advanced text books for nurses. Dr. DeLee has met the requirements for obstetrics in this work in which he has included the essentials of obstetrics and the duties of the nurse during the different periods, and with care has left out all matter that has no direct bearing on the subject.

Part I is devoted to the anatomy and physiology of the pregnant and non-pregnant generative organs. The chapter on hygiene of pregnancy will prove of great value to the nurse to whom, rather than the doctor, a woman by instinct will often turn for information on subjects there described.

In Part II are described normal labor and puerperium and various operations that are performed for delivery of the child. While these operations are never performed by a nurse, it is necessary for her to know of them in detail and it is proper that they should be included in a work of this kind.

Part III is devoted to the pathology of pregnancy, labor and the puerperium. In an appendix is included sterilization and preparation of surgical supplies and a glossary of the medical words used in the book.

PEDIATRICS: A MANUAL FOR STUDENTS AND PRACTITIONERS. By HENRY ENOS TULEY, A.B., M.D., Professor of Obstetrics in the Medical Department of Kentucky University; Editor of *Louisville Monthly Journal of Medicine and Surgery*; Visiting Physician to the Louisville City Hospital, to the Masonic Widows' and Orphans' Home and to the Home for Friendless Women; Visiting Obstetrician to the John N. Norton Memorial Infirmary. The Medical Epitome Series, Edited by V. C. PETERSON, A.M., M.D., Instructor in Surgery and Anesthetist and Instructor in Anesthesia at the New York Polyclinic and Medical School, etc. Pp. 266. Philadelphia and New York: Lea Brothers & Co., 1904.

It is surprising how much information and how many subjects can be included in an epitome. In this one the author has included all subjects that would come under the head of pediatrics and

stated concisely the salient points. The general arrangement of this work is far superior to that of quiz compends with questions and answers. The few questions that are added to the end of each chapter in this epitome add little or nothing to its value. The book will be of value to students preparing for examinations but as a source for real knowledge of pediatrics its use is very limited.

BRIEF OF CURRENT LITERATURE.

DISEASES OF CHILDREN.

Lumbar Puncture in (a) Otitic Serous Meningitis; (b) Cerebrospinal Form of Typhoid Fever; and (c) Cerebrospinal Meningitis.—Francis Huber (*Arch. of Ped.*, January, 1904). (a) The history is one of old otitis finally followed by a meningitis of a severe type. A mastoid operation revealed abnormal intra-cranial pressure. The dura was not opened because of the danger of infection. Instead a lumbar puncture was done, 30.0 grams of fluid being withdrawn. The symptoms remained about the same, so twenty hours later 16.0 grams more were withdrawn, after which the symptoms began to at once improve, continuing to complete recovery. (b) This case was one of typhoid with very marked meningeal symptoms. Three Widal tests were tried, each giving a positive reaction (dil. 1 to 20). On the seventh day of the disease a lumbar puncture was done; two drams of clear cerebrospinal fluid were allowed to escape, coming away in a steady stream as though under considerable pressure, relieving somewhat the cerebral symptoms. Three days afterward another puncture was made, the same amount of fluid being allowed to escape, this also coming with considerable force. The patient, a child of nine, made a good recovery, being discharged sixty-one days from the onset of her typhoid. (c) On the seventh day of the meningitis 11 drams of a somewhat cloudy fluid were removed by puncture. This contained a very large number of pus cells and a few mononuclear cells. Three days later the child was much brighter, taking interest in things. A single large tapping was done to relieve the tension, thereby favoring absorption. It may be necessary to make several punctures.

The Artificial Feeding of Infants.—F. Hobill Cole, M.B. et Ch.B. Melb. (*Interc. Med. Jour. of Austr.*, Dec. 20, 1903). The subject of artificial feeding is so full of discrepancies that widely diverging views are held by the leading workers and thinkers. The fundamental difficulty being that there is no perfect analysis of milk, especially with regards to the chemical composition of milk. Added to this is the idiosyncrasy of the infant. (a) All substances, apart from breast milk, are foreign to the infant's digestive tract, and may cause disturbance. (b) No system of artificial feeding has been devised, or is likely to be devised,

which will produce so large a number of healthy men and women as the nursing of infants by their own mothers. (c) Any substitute should resemble human milk as nearly as possible, and this condition is fulfilled only by the milk of some other animal. (d) The differences between human and cow's milk lie, not only in the percentages of casein, lecithin, phosphorus, and lactalbumen, but more in their chemical composition, for they differ radically, as may be seen on curdling them with rennet and a trace of dilute hydrochloric acid. It has been truly said that they differ in accordance with the type of digestive tract they are to develop; for example, the stomach of the calf, which has to digest grass, requires casein of far different character to that required by the stomach of the human infant. (e) There is no known method of procedure which will convert cow's milk into human milk. (f) With the exception of a few limited facts and formulæ we have no data which, with our present knowledge, will enable us to know in every case when to increase or diminish the proteids and the fat. (g) Upon fresh, unpolluted milk, rather than upon its modification, depends the health of artificially-fed babies. The worst cases one sees are those suffering from previous unsuccessful efforts at feeding. We have first to find which ingredient or ingredients are at fault, and see that the requisite amount for single feedings are supplied in small bottles. *Cream*.—Fats, save nitrogenous waste, are a source of heat and so assist the proteids. They are essential to the growth of bone, therefore required in greater proportion in baby life than later in life. The baby's food should contain from $3\frac{1}{2}$ to $4\frac{1}{2}$ per cent. of fat. Serious and lasting diseases may be induced by insufficient fat on the one hand, yet many infants, on the other, are unable to digest more than a small fraction of the fat we wish they would, as is shown by vomiting diarrhea and wasting, which improve and disappear with the withholding for a time of the fats. *Condensed Milk*.—Condensed milk is frequently of value because of its low fats, high carbohydrates and easily digested proteids. Cod liver oil, in fifteen to twenty-drop doses, three times a day, and some raw meat juice are useful additions to it. *Proprietary Foods*.—The so-called "infant foods" owe what virtue they possess chiefly to the large amount of carbohydrates they contain. They may be useful in supplementing breast-feeding or in replacing the bottle for a short time. *Raw Meat Juice*.—Raw meat juice, prepared by mincing rump steak, soaking in cold water for half an hour, and expressing the juice, is of high nutritive value and easily digested. It is not of high antiscorbutic value. *Whey*.—Where under-feeding is necessary, whey is very useful to ensure low proteids, low fats and high percentage of lactalbumen. If cream or whole milk is to be added it is well to raise the temperature of the whey to 150° F. to destroy the excess of rennet. *Boiling Milk for Sterilization purposes*.—This process certainly kills the bacteria, but does not neutralize the toxins of contaminated milk; and further, be-

cause of the changes it causes in the salts, fats, and proteids of milk its nutritive value is impaired and it is less digestible. *Pasteurization*.—This, while eminently satisfactory, is out of the reach of the poor. *Peptonization* is of great value in cases of faulty casein digestion. *Modification of Cow's Milk*.—This has for its object the control of the percentages of the ingredients of milk to suit it to the normal infant's stomach and to the stomach of the ill infant. It cannot change the character of the proteids. The three following formulæ are used as the basis for many variations. For a baby one week old (ten feedings in twenty-four hours, two ounces at a time): Fresh cow's milk, one-half ounce; gravity cream, one drachm; sugar of milk, one drachm; lime water, one-half ounce; water, one-half ounce. For a healthy infant, two months old (eight feedings of four ounces): Fresh cow's milk, two ounces; gravity cream, one-half ounce; sugar of milk, one-quarter ounce; lime water, one ounce; water, one ounce. For a healthy infant, five months old (seven feedings of six ounces): Fresh cow's milk, four ounces; gravity cream, one-half ounce; sugar of milk, one-quarter ounce; lime water, one ounce; water, one ounce. For a healthy child of ten months (six feedings of eight ounces): Fresh, whole cow's milk, one feeding daily of fresh mutton tea, or beef tea, boiled with sago, rice, or barley, and strained; arrowroot, maizena, or a fresh biscuit may be added to the milk. At twelve months order potato soup, or fruit juice, and vary the farinaceous diet. In all cases the feeding must be conducted very systematically.

Concerning the Accuracy of Percentage Modification of Milk for Infants.—David L. Edsall, M.D., and Charles A. Fife, M.D. (*N. Y. Med. Jour.* and *Phila. Med. Jour.*, Jan. 9, 1904). Percentage modification is theoretically reasonably accurate; the practical results we will see are not always what could be wished, because of the variation in the composition of the milks and cream and the personal equation involved. This paper gives the results of 88 analyses of different milk mixtures: 1. A series of home modifications made from milks and cream of known composition. 2. A series of home modifications made from ordinary market milks of unknown composition. 3. A small series of modifications made by the authors chiefly using top milk and the lower fat-free milk. 4. A series of laboratory modifications. The first series, when made by persons of intelligence, show satisfactory accuracy as to proteids, the widest variations being slightly within 0.2 per cent. The fats varied more widely, 0.8 per cent to 1.3 per cent. In cases of unintelligent modifiers, the fat error ran up to 1.6 per cent. In the second series the results were extremely unsatisfactory; the proteids varying from the formulæ as much as 0.8 per cent. downward and 0.4 per cent. upward, while the fats seldom came within 0.5 per cent. of the amount prescribed. The error in the fats is largely due to the cream used. In this series, as in the first, the personal equation is most apparent. The results of the third series show that with

the best certified milk this method may give excellent results, but that with other milk the results may be erratic. The fourth series shows the laboratory modification to be very uniform and accurate, especially with regards to the proteids, the variation in the fat percentage is not quite so satisfactory, but within the range of unavoidable error. On the whole, the results are excellent, particularly with the low formulæ, which are the more important. The authors say, in general conclusion, that their work justifies them in believing that: (1) Milk modifications, under the best of conditions, will often vary 0.2 per cent, occasionally 0.3 per cent. from the prescribed formulæ, with modifications of medium strength. With low modifications the error will be correspondingly less, and with high modifications correspondingly somewhat greater. (2) Home modifications are, within the limits just mentioned, trustworthy if made by a clear-headed and careful person, from milks and creams of a chemical composition that is known to be reliable. (3) If the composition of the milks and creams used is not known, or if one cannot be sure that the modifier is careful and clear headed, home modifications are likely to vary greatly from the formulæ prescribed. (4) Laboratory modifications appear from our figures to be satisfactorily accurate, and are to be preferred, excepting when a thoroughly capable person can have milks and creams of known and uniform strength and make the modifications at home.

Some Cases of Infantile Nephritis.—F. M. Fry and C. F. Martin (*Arch. of Ped.*, January, 1903). The urine was obtained from the males by binding a bottle tightly to the inner side of one thigh, keeping the child on the side until the specimen was obtained. It was obtained from the females by means of reflex stimulation, applied either over the bladder or at the meatus. This was best done by cold above the pubis or by the mere manipulation of the orifice itself. Usually one or the other of these methods caused the urine to be voided in a stream so that it could be easily caught. Urine from 100 infants under three months was examined; at least three samples from each taken on different days. The specific gravity varied with the feeding; the average for all the samples was 1.006.1. About two-thirds of the specimens were acid, the other third neutral; none were really alkaline. Of those from breast-fed children a little more than three-quarters were acid, while 91 per cent. of the bottle babies showed this reaction. Albumin was found in 19 of the cases; of these 15 were from bottle-fed children; 17 of these 19 cases had casts, mainly hyaline and granular; a few epithelial. There were in the seven autopsies obtained, all showed uric acid infarcts and 14 other cases with casts, but without albumin. Uric acid was found in abundance in 26 cases; of these 23 had casts and 19 died. parenchymatous nephritis.

Pancreatic Infantilism.—(*The Scottish Medical and Surgical Journal*, April, 1904.) Byron Bramwell, at the February meeting of the Medico-Chirurgical Society two years ago showed a

patient who was suffering from a hitherto undescribed disease, which he termed pancreatic infantilism. At the March meeting of the Society in 1904 he again showed the same patient. A remarkable change has resulted from the administration of pancreatic extract. When first shown to the Society in February, 1902, the patient was eighteen years and nine months old, but he did not look more than eleven years of age, at which age his bodily development had been apparently arrested; he was perfectly formed and presented none of the evidences of sporadic cretinism; mentally he was bright and intelligent. Before the pancreatic treatment was commenced on December 27, 1901, his height was 4 feet $4\frac{1}{8}$ inches, and weight $63\frac{1}{2}$ pounds. For nine years he had suffered from chronic diarrhea; the average number of stools was five or six in twenty-four hours. Abdomen was swollen and tympanitic. The urine was free from sugar.

The pancreatic secretion was shown to be defective or completely absent by three separate methods, viz.:

(1) The stools contained a considerable quantity of undigested fat; this undigested fat became very much less after the administration of pancreatic extract.

(2) When the patient was taking a milk diet the amount of phosphoric acid in the urine was greatly below the normal; after the administration of pancreatic extract the amount of phosphoric acid was markedly increased.

(3) By Sahli's test. This test consists in the administration of capsules containing iodoform surrounded by a glutoid substance, insoluble in the gastric and intestinal secretions but soluble in the pancreatic secretion. If the pancreatic secretion is active the glutoid wall of the capsule is dissolved and the iodoform set free; iodine in the form of iodides and iodates can then be demonstrated in the saliva by testing with chloroform and nitric acid; the nitric acid sets free the iodine which gives a pink color to the chloroform. This test demonstrates, firstly, the length of time that food (*i.e.*, the capsule), remains in the stomach, and secondly, whether the pancreatic secretion is active or not. These three methods showed that the pancreatic secretion was deficient or entirely absent. It seemed probable that the defective metabolism in the upper part of the gastro-intestinal tract, the diarrhea, and the arrested development (the infantilism) were due to defective or arrested pancreatic secretion. The results of the administration of a glycerine extract of pancreas, have confirmed this view.

(1) Before the treatment, there were on an average five or six loose motions daily; now there are on an average two motions daily, one of which is formed.

(2) Before the treatment he had not grown at all for eight years; during the treatment, two years, he has grown $5\frac{3}{8}$ inches, and has increased 22 pounds in weight.

(3) The sexual development, which, when he came under observation was quite infantile, is now progressing in a normal man-

ner, there has been a growth of pubic hair, and the penis and testicles have developed.

(4) The patient looks much older, and his voice, which was high pitched and childish, has become low-toned and rough. The condition is a distinct clinical entity—a new disease which has not hitherto been recognized, and what is of more importance the results of treatment seem to show the manner in which the disease should be treated and by which it can be cured. It is quite different from sporadic cretinism, with which many of these cases have no doubt been confounded.

Skiagraphs were taken when he first came under observation. They showed that the epiphyseal lines—which should close between the sixteenth and eighteenth years (Gray)—were then, at the age of eighteen years nine months, unclosed, consequently that the bones were capable of further growth.

Appendicitis in the Young.—(*Pediatrics*, Feb., 1904.) An editorial on this subject says: Stomach ache in boys is not an uncommon affection. Any stomach ache is open to suspicion. It may be but the clamor of an outraged digestion or it may be an appendicitis. Some of the stomach aches are forerunners of the most disastrous fulminating types of appendicitis. How they are to be told apart is taken up by Sir William Bennett, Senior Surgeon, St. George's Hospital (*Lancet*, Jan. 2, 1904), in a clinical lecture. Generally the ordinary stomach ache is acute, and passes off rapidly, perhaps with an attack of diarrhea and vomiting. It is rarely associated with a rise of temperature, and in passing off it usually does so at once and is done with. Further, although the rule is not absolute, the pain is apt to be general and usually passes to the left side as the colon becomes the localized seat of the diarrheal disturbance. In the appendix stomach ache, however, there is usually a marked rise in the temperature, it rarely passes off, not to recur again, and the after pain tends to gravitate towards the right side, often in its typical position, sometimes over the gall-bladder, rarely higher up, suggesting even a pleurisy. A sign of value then present in children is a sense of discomfort when the little patient "stretches" the lower limbs. This is rarely present in ordinary stomach ache. A flushed face, inclined to duskiess, black lines beneath the eyes, a furred tongue, and evident distress, taken in conjunction with the ordinary signs, carry a very definite meaning, and yet at times the boy who says he is all right, whose symptoms have improved and who wants to be "let alone," may really be suffering from a toxemia, and gangrenous perforation may be imminent. Decrease of pain is a deceptive sign, it may mean improvement, it may be benumbing of the patient's sensory nervous system from toxemia. Temperature—In the young this is extremely deceptive. A fall from 102° F. to 99° F., with apparent improvement is extremely common. Yet it is not to be relied upon. One of the commonest precursors of gangrene in these patients is a drop of temperature. A gradual fall is nearly always a good sign; a sudden fall means, beware.

Transposition of the Viscera.—(*British Journal of Children's Diseases*, March, 1904.) A case was shown to the Society for the Study of Diseases in Children by Dr. Eric Pritchard. The girl was twelve years of age. Examination showed that the heart, the liver, the stomach, and the spleen were transposed. The child had been delicate since birth, and had at one time been treated for enlargement of the spleen, owing to the liver having been mistaken for that organ. In reply to questions, Dr. Pritchard said the girl was undoubtedly deficient mentally, and that he would have a skiagram taken to see whether the aortic arch was on the right side.

Congenital Dislocation of the Fifth Cervical Vertebra in an infant of three months was shown by Mr. Tubby (*Brit. Jour. Child. Dis.*, Mch., 1904). The deformity was noticed the day after birth, the confinement having been a normal one. No symptoms until a week ago, when vomiting came on and had occurred several times a day. At the base of the neck was a sharp bony prominence which corresponded to the fifth cervical vertebra. The summit of this process was formed by the left articular process, and the spinous process could be felt to the right of it, and not so prominent. On pharyngeal examination a depression could be felt on the left side of the affected vertebra. There was also congenital scoliosis curve being to the right in the dorsal region and to the left in the lumbar. When double extension was applied in bed the child seemed to be more comfortable and her crying ceased. Another congenital deformity present was an absence of the costal cartilages of the fifth to the eighth ribs on the right side of the chest. There was no evidence of paralysis. Mr. Tubby regarded the case as one of dislocation of the vertebra, but was not prepared to say whether this was dependent on the scoliosis or not. He proposed to make an attempt to reduce the dislocation by traction and manipulation, but thought that as three months had elapsed, the prospect of cure was not good.

Extra- and Intra-Cranial Hemorrhages in the New-born.—T. Howell Evans (*Brit. Jour. Child. Dis.*, Mch., 1904) considers that these hemorrhages are dependent on the following factors: (1) An irregularity in the moulding of the fetal head; (2) this irregularity arises from the presence of accessory sutures in the situations where certain extra-cranial vessels anastomose with the intra-cranial vessels, and (3) the rise of blood pressure which occurs during the reactionary period when the child is recovering from the birth trauma. In support of these views he noted the facts that these hemorrhages occur in non-instrumental labors, and as frequently in breech as in vertex presentations, and with approximately the same frequency as the accessory sutures referred to. Selecting the parietal bones for examples, he said that when a parietal bone is developed from two centers of ossification, there is left a small space extending from the situation of the parietal foramen to the sagittal suture. At the parietal foramen the occipital artery communicates with the middle meningeal

artery, and the occipital vein directly or indirectly with the superior longitudinal sinus. In a normal fetal skull these vessels are secure from injury, but when the accessory sutures are present irregular moulding occurs at them and the vessels are lacerated. The author illustrated the anatomical irregularities and the allied conditions in anthropoid apes by a series of lantern slides.

Hydatid Cyst of the Brain.—(*British Journal of Children's Diseases*, Feb., 1904.) Henry Ashby says that hydatid cysts are not often found in the brain and are not easily distinguished from other forms of cerebral "tumor" of slow growth, but as they are more amenable to treatment by surgical means than any other form of cerebral "tumor," it is of importance to be able to make a differential diagnosis. Hydatid cysts are for the most part of slow growth, and tend to push on one side and compress the brain tissue. They give rise to increased intra-cranial pressure and this increased pressure renders regional diagnosis difficult. The patient, eight years and three months old, was admitted to the Manchester Children's Hospital March 24, 1903, and died June 24, 1903. There had been symptoms which suggested cerebral troubles for two and a half to three years. Early symptoms consisted of headache, vomiting and "faints," produced probably by the gradual increase in size of the cyst, causing increased intra-cranial pressure. The first focal symptom, with the exception of the local pain, was the twitching of the face on the same side as the lesion, produced apparently by the bulging of the cyst in the direction of the mesial line, and compressing the neighborhood of the face center of the opposite side; at the same time much more compression had been exerted from within on the ascending frontal, and middle, and inferior convolutions of the right side, without, as far as can be gathered from the history, giving rise to any regional symptoms.

Toward the close of the illness there was first an exaggeration of the reflexes, and then a spastic condition of the left arm and leg, due probably to the compression of the right internal capsule. A diagnosis of tumor of the right frontal lobe was made during life on the strength of the headache being referred so persistently to the forehead over the right eye; the optic neuritis, with thrombosed veins and hemorrhages; and the paresis of the third nerve. The eclampsia involving the face, arm and leg on the same side as the headache suggested compression or irritation of the internal frontal convolution on the opposite side. A hasty assumption that the lesion was a solid tumor too deeply seated for surgical interference is to be regretted, as it was clear that the cyst might have been readily tapped and drained. The case certainly suggests the propriety of at least trephining in all cases of cerebral disease where there are signs of increased intra-cranial pressure and intense optic neuritis.

On opening the cyst on post mortem it was found to be due to the presence of a large unilocular hydatid of the taenia echinococcus. The cyst measured three inches in its largest diameter,

with thick transparent walls to which were attached numerous broods of typical scolices, apparently active. A thin fibrous capsule separated it from the surrounding brain surface and from the cavity of the right lateral ventricle.

Enuresis in Children.—(*The British Journal of Children's Diseases*, Feb., 1904.) Percy Lewis, M.D., says that the variety of causes to which this condition has been attributed and the very diverse treatments which have been recommended for its cure, suggest that its pathology has not been accurately studied. The subjects are unhealthy in aspect, either anemic, bilious looking or lymphatic. Their skins are dull and inclined to acne or some low form of eczema. Are not fond of meat, and live mostly on farinaceous and saccharine foods. They are disinclined for exertion or school work. If taken up during the night frequently to pass water they are found overcome with sleep and difficult to rouse, seeming in a kind of stupor into which they relapse on being put back to bed. Each time they are taken up they pass a large quantity of urine, yet a short time later they are found asleep, and the bed "deluged" with water. If urine be measured there will be noticed that there is seldom less than two pints, and this may be doubled. It has a low specific gravity (1002-1005 is not unusual), neutral or alkaline and with a deposit of triple phosphates or oxalates. Frequently a trace of albumin is present. The condition at night is of polyuria, the urine tending to become normal in the daytime, except in cases where the incontinence is continued in the day. The treatment which has been successfully carried out by the writer was suggested by the consideration of a similar condition occurring in infants fed on starchy foods, who pass a larger amount of urine than others, their nurses complaining that they are always soaking their diapers. When their starchy food is cut off this symptom disappears. It is the same with the victims of enuresis, in most cases a rigid antidiabetic diet removes the symptoms in a few days. The cause, however, due to a general depression of health produced by an excessive starchy diet, requires general tonic treatment at the same time. In about three or four weeks, sometimes sooner, if the tonic treatment is pushed as well, a normal diet may be given without enuresis happening. Whilst not wishing to contend that enuresis is a condition of late rickets, the writer is of opinion that it is a weak bodily condition caused by an excessive starchy diet, and associated with inability to properly digest that excess.

Ethyl Chloride as a General Anesthetic.—(*The British Journal of Children's Diseases*, Feb., 1904.) J. Henry Chaldecott, Senior Anesthetist to the Italian Hospital, and to the Metropolitan Throat, Nose, and Ear Hospital, has administered ethyl chloride over five hundred times and has arrived at the following conclusions:

1. It is the best anesthetic known for what may be called "single dose" cases, when the patient is anesthetized, the mask

removed, and the operation performed without any further administration.

2. It is certainly worthy of a trial in all minor operations.

3. It is a safe and rapid means of inducing anesthesia as a preliminary to chloroform or other narcosis.

4. Although its effects are transient, it is doubtless a powerful anesthetic, and should be carefully administered, and the patients properly prepared.

Class I includes all short operations upon nose and mouth, such as tonsillotomy and the removal of adenoids. I am glad to welcome the substitution of ethyl chloride in children for nitrous oxide or nitrous oxide and ether which is by no means always ideal. Ethyl chloride strikes the happy medium by combining the good points of chloroform, nitrous oxide and ether without their disadvantages, producing an anesthesia as quiet and free from asphyxial symptoms as the best form of chloroform narcosis and at the same time as rapid as nitrous oxide and as stimulating as ether.

Its points of superiority over chloroform in these cases are:

1. It can be given with the patient in any position; 2, anesthesia can be induced very much more quickly than could be safely done with chloroform; 3, there is no struggling; 4, a measured dose can be given; 5, it is probably much safer; 6, the after effects are quite trifling or absent altogether.

Its advantages over nitrous oxide are: 1. The anesthesia is of a better type, quieter, absence of suffocative symptoms; 2, no cumbrous apparatus is necessary; 3, the available anesthesia is about twice as long.

Its advantages over ether are: 1. It is much pleasanter to take; 2, induction of complete anesthesia is much quicker, no struggling; 3, there is no cyanosis or secretion of mucus; 4, it does not leave an unpleasant taste in the mouth or smell in the room; 5, the after effects are generally much less. In the second class of cases for short surgical emergencies two cubic centimeters sprayed on the sponge, and the mask held tightly to the face, will in a few seconds produce sufficient anesthesia for the opening of an abscess, or for the examination of an injured joint or limb. In the hurried work of casualty departments of hospitals, ethyl chloride is immensely useful. The third method of starting anesthesia with ethyl chloride and continuing it with chloroform or ether can be well done and is useful on account of the rapidity of induction and the absence of early cyanosis and struggling.

In the case of a child two or three c.c. of the drug are sprayed on the sponge, the mask is applied tightly to the face, and one breath allowed with the air slot open; the slot is then closed, no further air admitted until anesthesia is complete; snoring usually ensues within twenty seconds, and a few seconds later the patient will be perfectly anesthetic, with flaccid limbs and insensitive corneæ. The mask can now be removed and the operation performed.

Tonsillitis a Cause of Acute Nephritis.—John Lovett Morse (*Archives of Pediatrics*, May, 1904) says that within the last few years papers have appeared emphasizing the importance of tonsillitis in the etiology of acute endocarditis. Little attention has been paid to its possible importance in the etiology of acute nephritis. Few American or German text-books refer to it. The French have paid more attention to it. It would seem reasonable that tonsillitis, being due as it is to bacterial infection and often complicated by cervical adenitis, peritonsillar abscess, or acute inflammation of the middle ear, should lead to inflammation of the kidney. An additional reason why it might naturally be followed by inflammation of the kidney is that it is usually caused by streptococci, and, as is well known, the usual cause of scarlet fever, which is more often complicated with acute nephritis than any other disease, is the streptococcus. Nevertheless, judging from the literature of this subject, tonsillitis is seldom complicated by or the cause of acute nephritis.

During the last eight months I have happened to see four cases of tonsillitis followed by acute nephritis, which leads me to believe that tonsillitis must be more often followed by acute nephritis than is usually supposed. Two of these cases were in adults, and two in children. In all, scarlet fever or previous disease of the kidneys was excluded.

Nephritis more often follows tonsillitis than is generally supposed, and in many cases that are considered primary the infection enters through the tonsils, the local manifestations not having been severe and having been forgotten. This being so, tonsillitis should not be looked upon, as it usually is, as a simple disease and but of little importance. A disease which can cause acute endocarditis and acute nephritis is certainly one worthy of consideration. The heart and urine in tonsillitis should, therefore, be examined as carefully as in rheumatism or scarlet fever, and the examination kept up for a time during the convalescence.

THE AMERICAN
JOURNAL OF OBSTETRICS
AND
DISEASES OF WOMEN AND CHILDREN.

VOL. L

AUGUST, 1904.

No. 2.

ORIGINAL COMMUNICATIONS.

ANATOMY, PATHOLOGY AND DEVELOPMENT OF THE
HYMEN.¹

BY

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(With eight illustrations.)

IN a discussion of the female genital organs the hymen must be given separate consideration. An exact knowledge of the anatomy and pathology of the hymen is important not only from a practical point of view, but also because it affords valuable evidence concerning the development of the female genitalia. Systematic investigations of the nature of the hymen, however, meet with some difficulty inasmuch as suitable post-mortem material is not easily obtained and portions of tissue excised during life are not often at our disposal. The observations underlying this ar-

Thesis written for admission to the American Gynecological Society.

title are based upon the microscopic examination of fifteen specimens of hymen, as follows:

1. From a fetus 8 inches long.
2. " " " 9½ inches long.
3. " " " 10¾ " "
4. " " " of 25 weeks.
5. " " " 7 months.
6. " " " 8 "
7. " " new-born (macrated).
8. " " girl of 3 days.
9. " " deflorated girl of 19 years.
10. " " virgin of 20 years.
11. " " " 20 "
12. " " deflorated girl of 30 years.
13. " " virgin of 62 years.
14. Caruncle from a woman of 49 years.
15. " " " " 76 "

ANATOMY.

The hymen is a membrane situated at the junction of vulva and vagina, partially closing the entrance of the latter. Older reports speak of the site of the hymen as being sometimes higher up in the vagina. Cumston,¹ in a medico-legal essay, refers to a trial for rape, in 1777, at which trial it was admitted by the medical authorities that the hymen was in some cases situated an inch or an inch and a half "beyond the vagina." Krimer² found, in a woman of 20, the hymen high up, 2 cm. above the vaginal entrance, the vulvar orifice seeming at first sight to lack the membrane altogether. Turnipseed³ and Fort⁴ stated that the hymen in the negress is situated from one and a half to two inches above the entrance of the vagina and is of greater density than that of the white woman. These statements were at once contradicted by Hyatt⁵ and Smythe⁶; and inasmuch as no similar observations have since been recorded, we are safe in attributing them to inaccurate examination or erroneous diagnosis.

Aside from the human female, the hymen, according to Hirst,⁷ is formed in the ape, bitch, bear, donkey, hyena and giraffe; and according to Nagel,⁸ also in the horse, cow and pig. Bischoff,⁹ on the other hand, states that the hymen is lacking in the anthropomorphic apes.

The macroscopic appearance of the hymen is in the majority of cases that of a semilunar fold. Next to the crescentic form

in frequency is the annular variety, in which the hymeneal opening is circular in shape. Less frequently other forms of hymen are found. The septate hymen has two openings separated by a

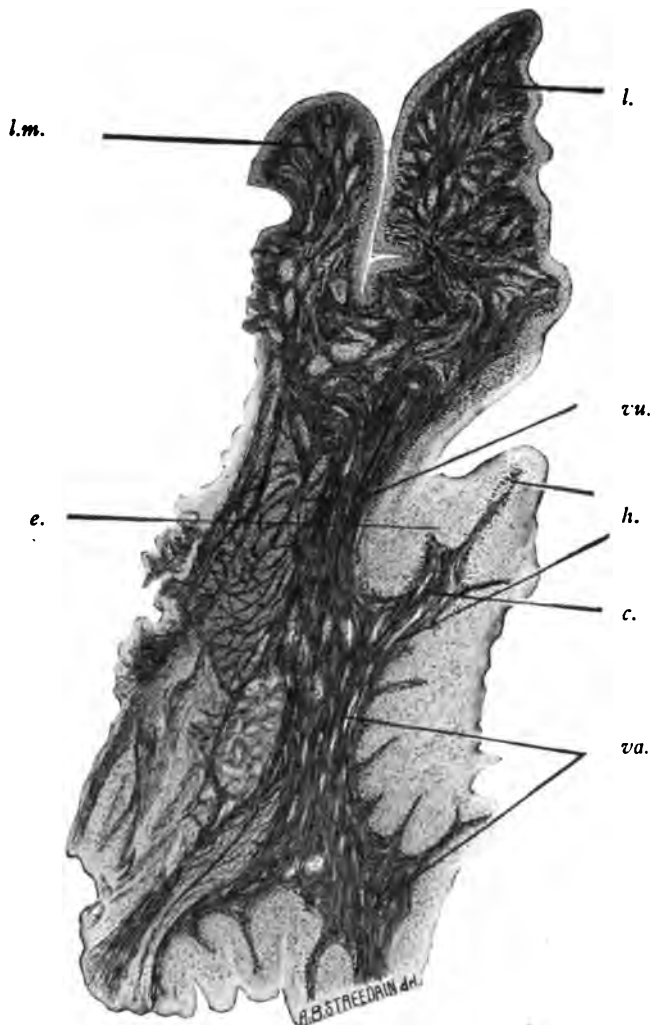


Fig. 1.—Hymen of a fetus of 25 weeks (Case 4). General survey: *h*, hymen; *e*, epithelial mantle; *c*, connective tissue stroma; *va*, vagina with papillæ; *vu*, vulva; *l*, labium minus; *l m*, labium majus.

bridge of tissue. The cribriform hymen shows a number of small openings resembling a sieve. The fimbriated hymen has small papillary excrescences upon its free edge. In the imperforate

hymen, the membrane is completely occluded. Most modern textbooks give instructive illustrations of these and other even more unusual varieties, and a glance at these pictures explains the macroscopic differences better than words.

The color of the hymen is white or light pink. In the fetus it is, like the vagina, distinctly white and in marked contrast to the pinkish color of the vestibule. I shall refer later to this decided difference in color. The thickness and consistence of the hymen vary widely from a structure delicate as a spider's web to a dense, ligamentous, even cartilaginous or "bony" membrane.

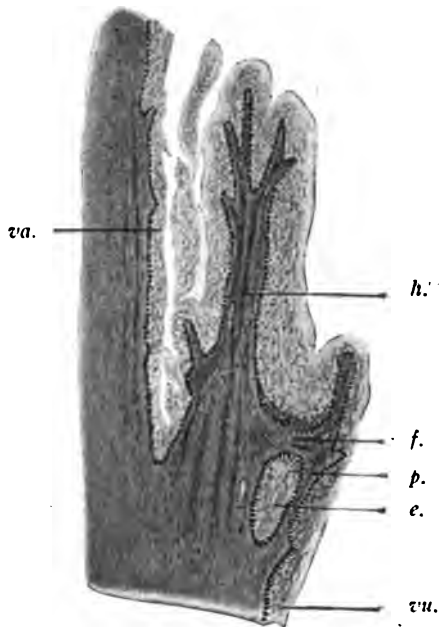


Fig. 2.—Hymen of a fetus of 8 months (Case 6). *f*, fibrous band connecting the slender basal papillæ (*p*) with the hymen proper (*h*) and shutting a mass of epithelial cells (*e*); *vu*, vulva; *va*, vagina.

In its position and relation to the vulva the hymen in the fetus projects forward into the cleft between the labia in the form of two apposed longitudinal lips. This condition exists also in the new-born and in the young child, while in the virgin the membrane is generally supposed to be stretched in a more or less vertical plane when the individual is lying in dorsal posture. Cullingworth,¹⁰ however, pointed out that on separating the labia minora in such a manner as not to disturb the situs of the struc-

tures lying behind them, the hymen can be seen in the same position as in the fetus and infant; *i.e.*, eversion of closely apposed longitudinal lips.

In the hymen we distinguish first, the base, the point at which it rises from the underlying tissue; second, the edge, which is differently shaped according to the individual case; and third, two sides or surfaces, the inner (upper, vaginal) and outer (lower, vulvar) surface. While, according to Dohrn,¹¹ one week after the first appearance of the hymen it is as fully developed as

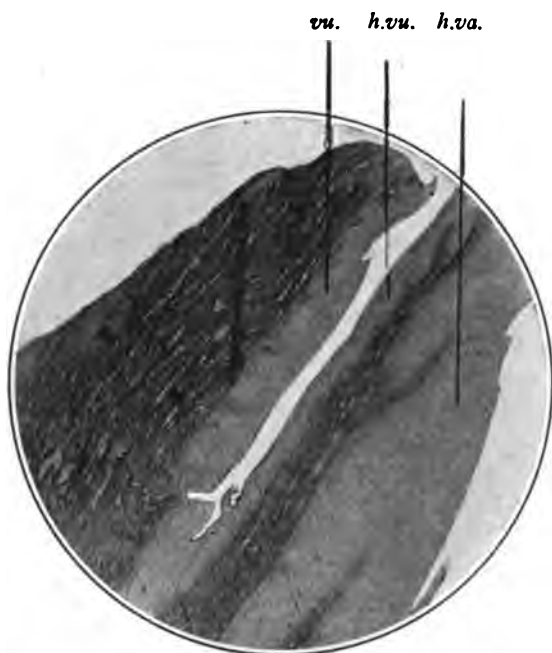


Fig. 3.—Hymen of a fetus of 7 months (Case 5). *vu*, vulva; *h, vu*, vulvar side of hymen; *h, va*, vaginal side of hymen.

is usual in the new-born, the microscopic picture varies with the age of the bearer. The hymen is composed of a dense connective tissue, covered on either side with epithelium. In the fetus it projects in the form of a long slender fold exhibiting on either surface numerous filiform and conical papillæ. Kölliker,¹² Dohrn¹¹ and others describe these papillæ only upon the inner surface, but Schäffer¹³ already pointed out that they are almost invariably found also on the vulvar side. Among the papillæ which in their turn frequently possess smaller secondary papillæ, there is one of conspicuous length found with great frequency

upon the vaginal side springing from the base of the hymen or immediately below it and extending more or less parallel to the hymen itself. This fold of tissue is considered by Schäffer as the inner, vaginal lamella (see p. 171); while Klein¹⁴ sees in it the remnant of the septum between the Müllerian ducts. The epithelium is of the usual multilayered pavement type. The cells of the basal layer are cubico-cylindrical, then follows a layer of lower cubical cells and several layers of polyhedral cells which become gradually flattened toward the surface, the outermost layers consisting of thin, plate-like cells. Keratinization does not occur in this early stage, the nuclei throughout taking the stain readily. Usually the epithelium is slightly higher upon the vaginal surface. The epithelium upon the vulvar side in these cases has a somewhat compressed appearance; the layers following the basal layers are not polyhedral but markedly flattened. This condition is visible in the hymens of the sixth and seventh fetal months (Figs. 2 and 3).

The hymen of the new-born is of considerably greater size. A very long papilla was in one of my specimens found upon the vulvar side (case 8, Fig. 4). From the time between birth and 19 years no specimens were at my disposal. Case 9 (19 years) and case 10 (20 years) presented within the rather compact hymen numerous short and a few longer slender papillæ which penetrated deep into the epithelial mantle, without, however, altering the smooth outer surface. On the other hand, in a second case of 20 years (Case 11), the surface of the hymen showed indentations, corresponding with the large papillæ there present. The latter possessed numerous secondary papillæ (Fig. 5). The same appearance was present in the hymen of 30 years (Case 12). The process from the inner surface of which we have spoken above was in this case markedly increased in size. The epithelial mantle in all of these cases was very thick but nowhere cornified. The connective tissue in the hymen of the fetus, new-born and adult is dense with numerous nuclei. Only in the papillæ is the structure somewhat looser. The bundles of connective tissue seem to be directly continuous with the vaginal connective tissue fibers. In the amount of nuclei as well as in the density of the fibers, the hymen is readily distinguished from the vulva. The blood supply is rather rich. Numerous blood vessels and capillaries are seen even in the tips of the finest papillæ, and in the hymen of the adult wide lumina are visible (Fig. 5).

In the last specimen, that of a virgin of 62 (Case 13), the rather

short hymen presents, on cross section, a somewhat tongue-shaped appearance and is covered with a few layers of cells with scanty protoplasm, but well-staining nuclei. The connective tissue shows no papillary elevations except a few low ones on the vulvar side. It is greatly increased, especially near the base, and its fibers form large bundles with markedly diminished blood supply.

To study the distribution of elastic fibers in the hymen, Weigert's stain was used. Broadly speaking, a gradual increase both in number and thickness of the elastic fibers takes place throughout the existence of the membrane. In the fetal hymen elastic

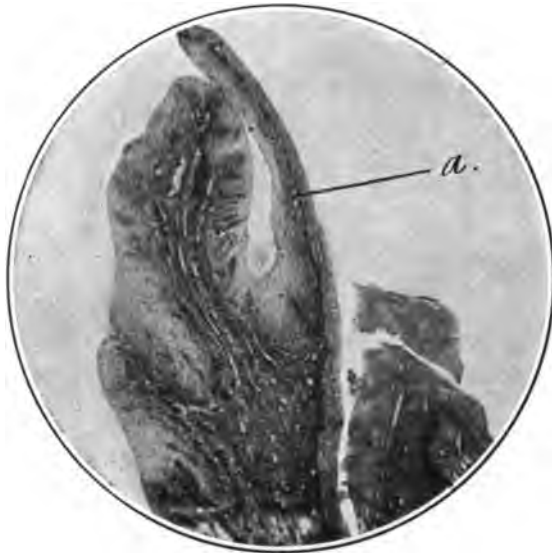


Fig. 4.—Hymen of the newborn (Case 8). *a*, long slender papilla on vulvar surface. Numerous blood vessels in connective tissue stroma.

fibers are present as soon as the membrane is formed, but they are very delicate and can be seen only with the oil immersion lens. Running along the base of the epithelium can be seen a fine elastic fiber. This fiber closely follows the contours of the hymen and seems to form an uninterrupted elastic membrane. Only in some of the finer papillæ is the continuity lacking in the earlier stages, but in the fetal hymen of 8 months the elastic membrane has reached even these points. This membrane does not send any processes into the adjoining tissues, and nowhere do elastic fibers penetrate into the epithelial mantle. In the connective tissue stroma there are but a few thin, short elastic fibers which run in

a longitudinal direction, parallel to the connective tissue fibers. The capillaries near the tip of the hymen have no elastic fibers. Only the larger vessels near the base have a very fine, internal elastic membrane. An outer circular layer of elastic fibers in the adventitia of arteries is visible only in a few instances in the 8-months hymen. From this external membrane a few very delicate fibers emerge into the adjacent bundles of connective tissue fibers and there assume a longitudinal direction.

In the hymen at full term the elastic fibers are readily seen with the oil immersion. In the papillæ they appear in long bundles which enter into the finest ramifications of the papillæ. They



Fig. 5.—Hymen of the adult (Case 11, 20 years). Large papillæ. Rich blood supply. Numerous lymph spaces and vessels.

surround the capillaries in the papillæ and near the free edge, without, however, entering into closer union with them. In the vessels of the deeper layers, the delicate internal elastic membrane, upon which lies the endothelium, can be readily distinguished from the outer elastic membrane in the adventitia. The two membranes are connected by a very few elastic fibrils. In the transverse sections of larger arteries of the base such anastomotic fibers in the circular muscular layer between the two membranes are numerous. The elastic fibers emanating from the adventitia are likewise increased

in number. The fibers in the connective tissue run both longitudinally and transversely, and increase in quantity but not in size nearer the base.

In the adult, the elastic fibers in general are thinner and less numerous in the higher portions near the edge than toward the base. In the latter the field of vision is almost entirely filled with a network of delicate fibers surrounding the connective tissue bundles. In the hymen of a girl of 19 (Case 9), a few months after defloration, the new-formation of elastic fibers at the torn edge is excessive. The elastic membrane at the base of the epithelium which consisted of but a single fiber in the fetus, is composed

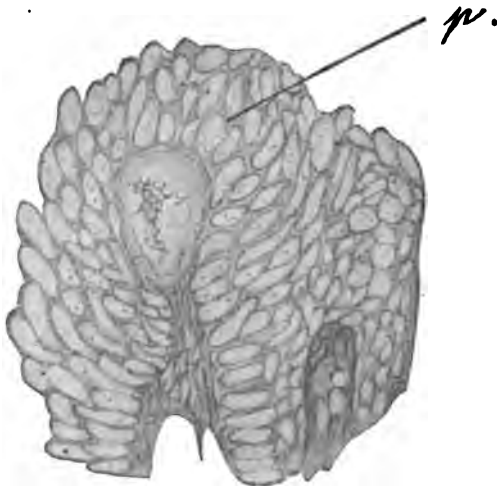


Fig. 6.—Sensory nerve-endings in hymen excised on account of vaginismus (from Amann). *p*, pavement epithelium surrounding a papilla which is almost entirely filled by an enlarged end bulb of Krause.

of a complex arrangement of delicate fibers which are wound about themselves. In general, the elastic fibers may be divided into two groups, one more or less circular around the hymeneal opening, the other extending radially towards the base.

With growing age the elastic fibers perceptibly increase in quantity and size and take the stain very readily. In the hymen of 62 years (Case 13), the elastic tissue is stained ad maximum after being exposed to the stain but five minutes. The network at the base of the epithelium consists of a thick entangled mass. The elastic fibers throughout the hymen are shorter and in some places seem to have nodular swellings.

Smooth muscle fibers have repeatedly been found in the normal hymen (Savage,¹⁵ Budin,¹⁶ Hirst⁷). Their presence, however, is not the rule. In my specimens I found them but once, in the hymen of 19. In this case in the deeper layer near the vulvar side could be seen a few fibers that took the yellow color of the picric acid in van Gieson's stain, though rather diffusely. This hymen was well formed but not unusually thick. On the other hand, the very fleshy hymen of a girl of 20 (Case 11, Fig. 5), did

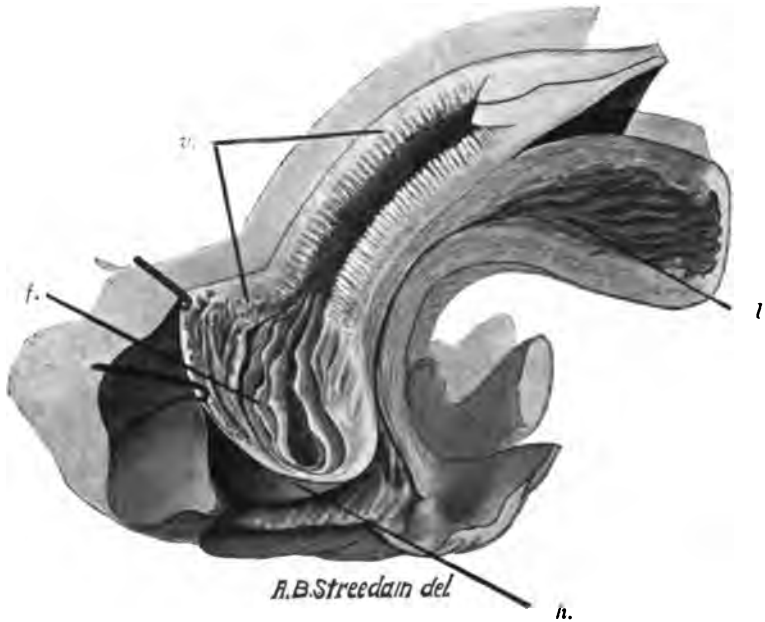


Fig. 7.—Genitals of a fetus of 25 weeks (Case 4). The longitudinal folds (*f*) of the lowest portion of the vagina (*v*) turn inward at the vaginal entrance and run parallel to the hymen (*h*), thus simulating bilamellation. *b*, bladder.

not contain any muscular elements. The fleshy appearance in this case was produced by an increase of connective tissue and the very rich blood supply. In certain pathologic conditions, such as atresia—congenital or acquired—smooth muscle fibers have been found with greater uniformity. Henkel¹⁷ and v. Tussenbroeck¹⁸ found numerous smooth muscle fibers in their cases of hymeneal atresia. In the wall of hymeneal cysts Palm¹⁹ and Ziegenspeck²⁰ detected traces of smooth muscle fibers.

In order to demonstrate nerves and nerve endings in the hymen

the methods of Marchi and Azoulay and the nigrosin and uran carmine methods were employed. Numerous attempts to find the structures in question proved unsuccessful. The great difficulties of staining the peripheral nervous system are well known, and failure in demonstrating the nerves should, in the first place, be referred to faulty technique. The nature of my material made it impossible for me to employ the methylene blue method which is supposed to give the best results. The possibility of a fault on my part, therefore, prevents me from passing a definite judgment

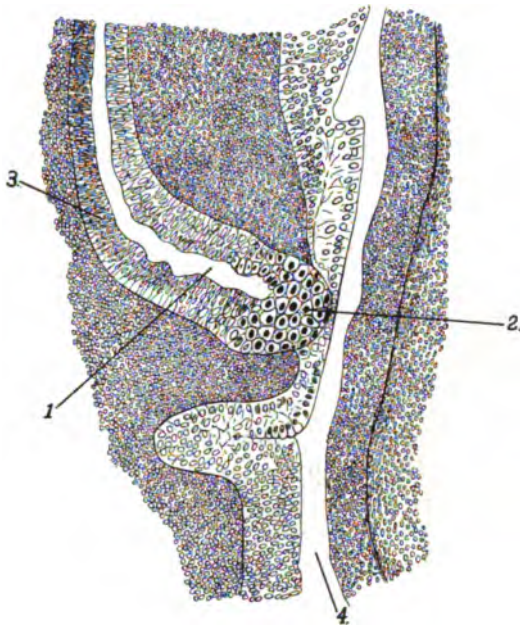


Fig. 8.—Sagittal section through the lower third of the Müllerian duct in a fetus 4cm. in length (from Nagel). 1, Müllerian duct; 2, lower end of the same (anlage of the vagina); 3, cylindrical epithelium of the anlage of the uterus; 4, canalis urogenitalis.

on the question of the nerve supply of the hymen. The literature on this subject, moreover, is extremely meager. Only older reports (E. Klein,²¹ Budin¹⁶) speak in a somewhat sweeping way of "the highly vascular and nervous mucous membrane." On the other hand, authors who have studied the nerve supply of both the internal and external genital organs since the introduction of more perfected laboratory methods (v. Gwaronsky,²² Koestlin²³) do not mention the hymen at all, though their re-

searches are very exhaustive otherwise. Wechsberg²³ stained an excised portion of an atretic hymen with hemalaun and eosin and found "here and there nerves in transverse and longitudinal sections." The only author who gives a detailed description of nerves in the hymen is Amann.²⁴ He found in two hymens excised for vaginismus Krause's terminal bulbs well developed in the papillæ (Fig. 6).

In this connection I may be permitted to speak of a number of clinical observations which I have made during the last year or two. I am aware that the value of such observations with regard to the question in hand is very limited, but I think that these investigations possess a certain interest.

As is well known, fear or anticipation of being hurt produces, in a great many women, to a certain extent the sensation of pain. If we succeed in eliminating this psychic factor, we obtain a more objective criterion as to the presence of pain. Thus I have tried to determine the sensitiveness of the hymen with regard to mechanical and thermic irritations. If the attention of the patient be diverted, I find that one can exert pressure and even slight traction upon the intact hymen by means of a dressing forceps without causing any pain. In women after defloration in whom the hymen is well preserved aside from one or two lateral lacerations, the hymeneal lips may be pressed or pierced without pain. Neither is there any thermic sensitiveness. If the vestibule is carefully avoided, the patient cannot state whether she is touched with a hot or cold instrument. Following the experiments of Calmann,²⁵ who examined the sensibility of the vagina and uterus, by means of small test tubes filled with hot and cold water, I arrived at the same results as far as the hymen was concerned. In two instances pain was caused by the slightest touch. One of these was a girl of 18 with an intact hymen who suffered from pruritus vulvæ; the other was a prostitute of 27 with myrtiform caruncles who was recently infected with gonorrhea. In these cases the sensitiveness may have been due to the pathologic condition of the genitals. From the above observations I am inclined to believe that the pain in defloration is due to the psychic condition of the individual and to the forcible dilatation of the vaginal entrance. Especially the latter seems to play an important rôle. In a nulliparous woman of 32 whose hymeneal lobes were not sensitive to touch or pressure, coition was extremely painful until a gradual dilatation of the vaginal entrance by means of tubular specula was effected. The normal dilatation by coition

had not taken place on account of some anomaly on the part of the husband.

I have digressed somewhat from my subject not because I am able to bring any positive proofs about the presence or absence of nerves in the hymen, but because I think that these clinical notes make the existence of a *very rich* nerve supply rather improbable. Possibly future attempts to decide the question histologically may be more successful.

According to Kollmann,²⁶ in the new-born mucous glands are found in the fold between hymen and labia minora. These glands, which are in great number in the labia minora and surround the entire vaginal entrance, are found also in the fossa navicularis in immediate proximity to the hymen and represent simple or ramified tubules .3 to .7 mm. in length. In the hymen itself distinctly glandular structures were found by Ruge²⁷ and Rincheval²⁸ upon the inner surface in a case of atresia. Klein,¹⁴ in the hymen of a fetus 27 cm. in length (5 months), observed glandular invaginations of the epithelium of the outer surface. Such invaginations have been described by Schäffer as crypts. Similar blind ducts were found also by Fleischmann.²⁸ In his case there was one, 13 mm. in length in the left side of the hymen, another in the right side 6 mm. long. The epithelium of these ducts was directly connected with that of the surface. In Piering's²⁹ case, small, well filled vesicles with thin walls were found near the free edge almost completely surrounding the hymeneal orifice. Upon histologic examination, these vesicles were found to be lymphectasias.

The latest and most exhaustive researches have been by R. Meyer.³⁰ He found six different varieties of glands or gland-like structures in the hymen of the fetus and new-born, viz.: (1) glands of the vaginal type upon the inner, vaginal side; (2) remnants of the Wolffian ducts; (3) glands or glandular tubules situated about the base of the hymen in the sulcus nympho-hymenalis and in the fossa navicularis and at times extending into the base of the hymen; (4) real glands of the outer, vulvar surface; (5) invaginations of the epithelium of the outer surfaces; (6) genuine pavement cell cysts underneath the outer surface. I myself found glands in one instance. The hymen of the 8 months fetus (Case 6) had at its base a few transverse lumina of glands lined with a cuboidal epithelium. These were at some distance from the surface and showed, in several sections, no com-

munication with the latter. No serial sections, however, were made.

Henle³¹ found exceptionally "erectile tissue" in the hymen. So far as I know this observation has not yet been corroborated by others.

The elasticity of the hymen is under rare circumstances so great that it remains unruptured even at childbirth. As a rule, however, the first coition or accidents such as falling astride of an object or violent exercise will rupture the delicate membrane. The number of tears which divide the hymen into "lobes" varies in the individual case. Healing takes place with considerable new formation of elastic and connective tissue. Very rarely such tears unite; if such should happen a cicatrix may remain.

Parturition definitely destroys the form of the hymen. Only small rests—carunculæ myrtiformes—resembling warts, are left. Microscopically, the caruncle represents a compact tissue of rather conical shape and set with a few short papillæ. The caruncle of long standing (Case 15, 76 years) appears merely as a dome-shaped elevation whose papillæ have disappeared. The blood supply of the younger caruncle (Case 14, 49 years) is very rich; that of the older very scanty. The superficial layers of the epithelium are cornified and the keratinization extends into the deeper layers between the papillæ. The process of cornification is present only about the hymen and, in a very few places, in the adjoining vaginal mucosa, but not in the adjacent portion of the vestibule. The elastic tissue is greatly increased both in quantity and in the size of the individual elastic fiber, and fills almost the entire field of vision.

As to the formation of caruncles, Schröder³² holds that the hymeneal lobes during childbirth are compressed and undergo gangrene, while Bellien³³ believes that the lacerations of the hymen, during labor, extend through the base of the membrane into the perivaginal connective tissue; cicatrization and consequent shrinking of these tears produce caruncles.

I am inclined to ascribe to the elastic tissue a certain rôle in the formation of caruncles. As described above, the elastic fibers are unequally distributed within the hymen, the portions nearer the base containing more and thicker fibers than the periphery. So long as the hymen is preserved in its entirety, or only torn into a few large lobes which but little alter the form of the hymen, the upper more delicate fibers encircling the hymeneal opening exert an action counter to that of the radial fibers which tend

to retract toward the base. If, however, the hymen, in childbirth, is torn into a number of small pieces, each piece retracts owing to the more powerful action of the radial fibers. For some time after, one is able to pull each caruncle to its original length, but after long standing the retraction results in an atrophy of the entire caruncle to a great extent through insufficient circulation. Regarding the retraction of elastic fibers, we know from numerous examinations that only the fibers of thin or medium size are really elastic. Thick fibers, such as are found in old age, are unyielding, and only such were observed in the caruncle referred to above.

PATHOLOGY.

The pathology of the hymen may be divided into: (1) inflammations; (2) malformations; (3) neoplasms.

Inflammation of the hymen may start primarily in this membrane itself or may originate from adjacent organs and tissues. As to the latter or secondary form, it is to be expected that the hymen, as a part of the vagina, may be affected by inflammatory processes which originate in the vagina and descend toward the vaginal entrance. Thus the different varieties of colpitis, including those that are produced by affections of the uterus, may lead to inflammation of the hymen. Acute infectious diseases such as cholera, variola, scarlatina, measles, etc., not infrequently produce secondary inflammations of the entire vaginal tract and, as we shall later see, play an important rôle in the origin of acquired atresia. On the other hand, the inflammatory process may ascend from the vulva. Gonorrheal infection here deserves the first place. Contamination with the colon bacillus, or ascarides emigrating from the neighboring anus may cause inflammation, and irritation from lack of cleanliness produces a similar effect. The inflamed hymen has a markedly reddened appearance and bleeds easily. Occasionally small excoriations are seen. The surrounding tissues have in general the same appearance. The microscopical changes in the inflamed hymen have not as yet been studied in detail, but in analogy with similar processes in the vagina we may expect to find round cell infiltration in the connective tissue and a desquamation of epithelium so that this layer is either very much thinner or, in places, is altogether absent.

The same pathologic conditions may, after defloration, affect the hymeneal lobes and, after childbirth, the myrtiform caruncles. Thus, in a case of recent gonorrhea, I found the myrtiform car-

uncles considerably thickened, deep red in color and extremely sensitive.

Primary inflammation of the hymen is due to either masturbation or coitus. In two girls who admitted masturbation, I found the otherwise intact hymen considerably thickened, grayish-white and edematous. Gosselin⁸⁶ describes cases in which onanism led to pathologic sensitiveness of the hymen.

In some cases the hymen, though normal, is particularly rigid; in others its orifice is large enough for the introduction of the penis without laceration. In any of these cases where there is a pushing back or dilatation of the membrane, it thickens, inflames and becomes very sensitive (Pozzi⁸⁴). Fritsch⁸⁵ considers this rigidity of the hymen as secondary. The impotent husband with a non-erectile penis or suffering from precocious ejaculation does not succeed in perforating or lacerating the membrane. The continuous insults lead to inflammation of the introitus vaginæ and hymen, and even to a purulent discharge. Inflammation of the hymen is the foremost factor in vaginismus.

It might be supposed that the specific lesions of syphilis and chancroid would occasionally be found upon the hymen. The text books on venereal diseases, however, which I consulted, make no special mention of such an occurrence; only Veit⁸³ pictures a hymen whose posterior margin is destroyed by a hard chancre.

As to dermatologic affections of the hymen, recent literature contains the report of Carrière.⁸⁴ This author observed three cases of vulvitis impetiginosa in children. In these cases the major and minor lips and the hymen were, at first, reddened and swollen. After a few days, the affected parts showed an eruption of miliary vesicles which afterwards opened and gave rise to small ulcerations, the latter containing staphylococci.

Traumatisms of the hymen have been extensively dealt with by Veit.⁸³ The majority of injuries occur in the first cohabitation and in childbirth, and as such traumatisms must be considered physiologic they have been spoken of in the first part of this paper on the normal anatomy of the hymen. Veit is quite right in distinguishing this class of hymeneal injuries from the severer ones produced by violent or abnormal coition. In such cases a profuse hemorrhage from the torn hymen may occur which demands medical interference. The literature on this subject is rather extensive and has been thoroughly considered by Veit. I agree with this writer that in cases of copious hymeneal hemorrhage other adjacent parts must have

been injured. In one case in my collection the young, newly married woman was brought into the clinic almost pulseless. Upon examination a deep tear of the hymen was found which commenced in the left upper quadrant and extended through the paraurethral tissue into the base of the clitoris.

Malformations of the hymen are either congenital or acquired. Total absence of hymen, reports of which are found in older literature, has not been observed by modern authors, and such authorities as Breisky³⁷ and Schäffer,¹³ while not denying the possibility, consider this phenomenon exceedingly rare. It can, however, occur only simultaneously with total absence of the entire genital tract, which in its turn is found only in embryos incapable of surviving. In this connection I might mention as a curiosity the intentional destruction of the hymen practiced in several parts of India and throughout China. Ploss³⁸ relates that the native nurses employ digital cleansing of the vagina in earliest childhood so thoroughly that the hymen in time disappears altogether. Thus not even the native physicians in China know anything about the existence of a hymen. Ploss himself examined a girl of European descent, but born in China, and found no trace of this structure. Similar customs resulting in the total demolition of the hymen exist among several Indian tribes in South America and certain savage nations of the Malay Archipelago. These manipulations, however, are not dictated by a desire for cleanliness, but rather by immoral reasons.

The existence of a true double hymen—one behind the other—has not been proved. Breisky³⁷ saw, in two new born females, a very thin membrane closing the lower portion of the vagina, close behind a well-formed hymen, and, furthermore, a firm septum retro-hymenale in a virgin 54 years old. Both he and Dohrn¹¹ consider these septa due to a coalescence of folds of the vaginal mucous membrane immediately behind the hymen. Such a formation is facilitated, as Dohrn points out, by the fact that at this point the lumen of the vagina is narrow even previous to the appearance of the hymen. Moreover, Piana and Bassi³⁹ found that in this area epithelial conglutinations in the human fetus are "physiologic." We shall speak later of the hymen bilamellatus of Schäffer in reference to double hymen.

A double hymen—one beside the other—has repeatedly been found in cases of double vagina and is easily explained in the light of embryologic studies of the development of the genital tract.

In connection with these cases of hymen duplex cum vagina septa it must be emphasized that congenital malformations of the hymen are impossible without anomalous development of the rest of the internal genitals. This holds true especially of the most frequent form of malformation of the hymen, viz., atresia.

Nagel⁸ and Veit⁴⁰ forcibly declare that only a minority of atresias of the female genitals can be considered as of congenital origin. Those of the hymen, hymen imperforatus, are found only where other parts of the Müllerian ducts are malformed. That form of hymeneal atresia which is caused by a conglutination of the hymeneal folds in utero, the rest of the genitals being normal, cannot be classified as a congenital atresia, a "vitium primæ formationis." All other cases of atresia which show a normal formation of the internal genitals—and these form the great majority—must be considered as acquired. C. v. Tussenbroeck,¹⁸ through the microscopic study of a case of "hymeneal" atresia, opposes this theory of Nagel and Veit. Her original publication in the Dutch language was not at my disposal, so that I had to rely on a short abstract in the *Centralblatt für Gynäkologie* and on one of her drawings reproduced in an article by Stratz.⁴¹ v. Tussenbroeck points out that while the normal hymen consists only of vulvar and vaginal epithelium and connective tissue between the two epithelia, her case of hymeneal atresia contained in the intermediary tissue also smooth muscle fibers and blood vessels but showed no signs of a previous inflammation. She takes the stand that in this case no hymen has been formed and that the septum consisted, in the first place, of the lower ends of the atretic Müllerian ducts with their surrounding secondary layer of smooth muscle fibers and, secondly, of the floor of the imperforate sinus urogenitalis. The patient, a girl of 24, possessed otherwise perfectly normal internal and external genitals.

While Stratz, Treub and Bolk expressed their agreement in the discussion following this demonstration of v. Tussenbroeck, Pincus,⁴² who strongly seconds the views of Nagel, points out that the absence of signs of previous inflammation is no positive proof against the supposition of an acquired atresia, and Henkel,¹⁷ in a similar case of hymeneal atresia, was able to show microscopically the presence of a chronic inflammatory condition and to demonstrate numerous mast cells and leucocytic wander cells.

A critical review of the numerous cases reported as congenital atresias convinces one of the strength of Nagel's theory. In the light of this theory, cases of pregnancy and childbirth with im-

perforate hymen are readily understood. v. Guérard⁴³ compiled about 50 instances of this sort from literature and added 5 observations of his own. This goes to prove that atresia may occur at any time in the adult. Even repeated atresias may take place. In this respect the third case of v. Guérard is unique. The patient in the seventh month of her first pregnancy complained of intense pain in the genitals. Although she had previously been operated upon twice for atresia hymenalis, the vagina was now found completely occluded by a firm and extremely sensitive membrane. After total excision of this membrane all symptoms promptly ceased, and normal delivery took place at term.

In the majority of instances, however, the formation of atresia dates back to earlier years of life. A careful anamnesis in such cases will often reveal its cause. Neugebauer,⁴⁴ with his well known assiduity and admirable thoroughness, has gathered almost 1,000 cases of gynatresias from literature. In 479 of these cases the atresia was undoubtedly acquired. In almost 300 the anamnesis was negative. Neugebauer himself says that it would be a mistake to interpret the lack of data in the history in favor of the congenital origin of the malformation. He refers to atresias in general, and it is clear that the same reasons must pertain to hymeneal atresias. The etiological factor is furnished either by acute infectious diseases such as were enumerated above, which lead to inflammatory processes in the genital system, or by vulvovaginitis due to gonorrhea or other causes. The inflammation subsequent to an acute infectious disease may make itself manifest at once or may remain unnoticed, as for instance in the case reported by Thienhaus.⁴⁵ In the latter event the result of the inflammation, viz.: more or less firm coalescence of the hymeneal folds, will not be noticed until at puberty the menstrual flow is obstructed. Even if, at that time, signs of previous inflammation should not be found in the imperforate hymen, this would not speak against the atresia being acquired. Meyer⁴⁶ has proved from literature the acquired origin of atresias even in the absence of any scars, and Odebrecht⁴⁷ points out that cicatrices acquired in infancy completely disappear within a few years on account of increased cellular vitality. If several sisters present hymeneal atresia, the influence is justified that the children were simultaneously affected by the same acute infectious disease. Pincus cites a very interesting case reported by Madge.⁴⁸ Four sisters, 2 to 10 years old, had hymeneal atresia; the fifth child, a boy, had phimosis. Pincus rejected the supposition of heredity in this

case and is inclined to ascribe this coincidence to the action to some noxious factor common to the five children, such as baths, sponges or towels.

This somewhat lengthy consideration may be thus summarized: In all cases of hymeneal atresia with normal functioning genital system, the condition is acquired. Here the occluding membrane causes the retention of menstrual blood and leads to hematocolpos, hematometra, etc.

The literature on the histology of hymeneal atresia is not very great. The reports of van Tussenbroeck¹⁸ and Henkel¹⁷ have been recorded above. A recent contribution to this subject was furnished by Wechsberg.⁸⁵ The patient, a girl of 14, had had measles, chicken pox and whooping cough. She came to the hospital with the symptoms of hematocolpos which an examination revealed to have been caused by an imperforate hymen. Wechsberg excised a small portion of the membrane. Upon microscopic examination both surfaces of the specimen showed papillæ, those upon the vaginal side being the larger. The vulvar surface was covered by pavement epithelium, the vaginal side by a single layer of high cylindrical cells. On the vaginal side, however, there were at one point, on the outer surface of a conspicuously large papilla, evidences of keratinization. On the vulvar side, cornification was seen throughout the uppermost layers of the epithelium. Within the connective tissue stroma there were smooth muscle fibers, numerous lymph spaces and vessels and a few nerves. There was no round cell infiltration nor other signs of previous inflammation such as cicatricial tissue.

Wechsberg refers to a similar case reported by Rincheval⁸⁶ in which there was found multilayered pavement epithelium upon the outer surface, while the inner surface was lined with cylindrical epithelium which in places presented glandular invaginations into the dense connective tissue.

In the observation of Kochenburger⁸⁷ the excised hymen had multilayered epithelium on its outer surface and cuboidal epithelium on its inner side. Kochenburger considered the latter to be the basal layer of the epithelium after the upper layers had been macerated by the accumulated blood in the occluded vagina and had been cast off. This epithelium resembled that found upon erosions of the portio vaginalis uteri. In corroboration of this view the upper layers of the pavement epithelium were seen to persist in some places while in others they had undergone degenerative processes, but were still in connection with the basal

layers. From his findings Kochenburger deduced that in hymeneal atresia the origin of epithelial cells resembling cylindrical epithelium is due to pressure, infiltration, imbibition, atrophy and necrosis. Wechsberg, however, maintains that in his and Rincheval's cases the cylindrical epithelium is primary inasmuch as no signs of cell degeneration could be detected; staining for mucous degeneration resulted negatively, and the cylindrical cells themselves were high and took the ordinary stains readily. In his opinion, the differentiation of the cylindrical epithelium primarily present in the vagina of the embryo into pavement epithelium had not taken place in the small portion excised. Upon the rest of the hymen and on the walls of the vagina multilayered pavement epithelium was found.

These arguments of Wechsberg in favor of an embryonal origin of the atresia in his case are not convincing. It would be strained to suppose that only the very small portion which was excised should have remained in embryonal state. Nor is the absence of degenerative signs sufficient proof. I believe Kochenburger is right in comparing this condition with the erosion of the portio vaginalis uteri. In this affection, after the upper layers have been destroyed by the pathologic process and have entirely disappeared, only the basal layer remains, the cells of which under the irritating influence may be stimulated to more excessive growth of size and length. They even invade the underlying tissue, forming the so-called glands of erosion, and I am inclined to ascribe a similar origin to the glandular formations mentioned in Rincheval's case.

Neoplasms of the hymen are very rare. To this group belong the cysts. I found in literature a total of 17 cases of hymeneal cysts reported by Bastelberger,⁴⁹ Döderlein,⁵⁰ Piering,²⁰ Ziegenspeck,^{51 20} Müller,⁵² Goerl,⁵³ Ulesko-Stroganowa,⁵⁴ Palm,^{19 56} Marchesi,⁵⁵ Lannelongue and Achard,⁵⁷ Theilhaber,⁵⁸ and Ricci.⁵⁹ These cysts occur on either side of the hymen, but more frequently on the outer surface. They may attain the size of a cherry and are occasionally multiple. Ulesko-Stroganowa's case presented one cyst on either side. In the case of Ricci, there was a small cyst in the wall of the larger cyst. In Ziegenspeck's third case two smaller cysts were found at the base of the main cyst. Piering observed a number of very small transparent cysts around the edge of the hymen. Microscopically, the hymeneal cysts have been carefully studied. On the outside they are covered with the hymeneal epithelium. Beneath this lie layers of more or less

dense connective tissue with well developed papillæ and numerous capillaries, in some cases combined with smooth muscle fibers. The inner surface is lined with epithelium, usually of the pavement variety, varying in thickness. In other cysts the epithelium has a more cuboidal or even cylindrical character (Marchesi). This variation depends upon the source of origin, which we shall presently consider. The cysts may contain detritus and epithelium, or a homogeneous yellowish-brown, jelly-like substance, or else a watery fluid. The latter may consist of lymph fluid (Piering), or may contain blood corpuscles (Ulesko-Stroganowa). Ricci's cyst, the size of a cherry, which he so carefully examined, contained 1 c.c. of a thick, dark brown liquid, the microscopical examination of which revealed epithelial cells in large number, detritus of blood corpuscles, fat droplets, glossy masses of amber color apparently consisting of red corpuscles and fat drops, and a small amount of hematic pigment.

Cysts of the hymen may develop in four different ways, viz.:

1. By invagination and separation ("Abschnürung") of hymeneal epithelium (cases of Bastelberger, Ziegenspeck, Goerl).

2. From rests of embryonal tissue within the substance of the hymen. This mode of origin is claimed by Ricci for his case. He cites the observation of Pestalozza,⁶⁰ who found ectodermal embryonal rests within the stroma of a hymen.

3. By conglutination or coalescence of converging hymeneal folds. This mode was first suggested by Döderlein, who observed a pronounced development of folds upon the outer side which in places approximate. When the tips of these folds become completely conglutinated, a space is shut off, which at first is filled with epithelial cells. By gradual necrosis and liquefaction of the central cells a lumen is formed and a cyst produced. Döderlein's view is strongly supported by Schäffer.¹³ According to this writer, the folds of the embryonal hymen are usually obliterated by the upward growth of the connective tissue. In many instances, however, these folds coalesce at the end of the papilla thus leaving a pocket of epithelium. One of my own specimens shows that fibrous bands may extend from any point of the papilla to the hymen and separate a mass of epithelium which may eventually give rise to a cystic cavity (Fig. 2).

4. By retention of contents: (a) In lymph spaces (Piering); (b) in portions of the Wolffian ducts within the hymen. In the report of Ulesko-Stroganowa and in one of Marchesi's cases, the cysts were lined with cylindrical epithelium similar to that of

the Wolffian ducts; (c) of a sebaceous gland. Palm considers his two cysts as true atheromata. This author bases his views upon the macroscopic and microscopic similarity to genuine atheromata found in other parts of the body, mainly the labia minora, and upon the supposition that the few true glands which have been found upon the inner and outer side of the hymen (Ruge, Klein) are of a sebaceous character.

Of other benign neoplasms of the hymen I have found two observations of polypus⁶¹ and one case of angioma.⁶² The original articles, however, I could not obtain.

Of malignant diseases of the hymen there exists in literature but one case of sarcoma reported by Sängner.⁶³ A child of three years had a profuse foul vaginal discharge, and occasionally a tumor of the size of half a finger appeared at the entrance of the vagina. From the vulva hung two bodies like mucous polypi, pediculated from the posterior hymeneal border. There was a still larger tumor with ulcerated surface, distending the vagina and sessile on the anterior wall. There existed, in addition, a number of polypoid excrescences, like hydatids, occupying various portions of the vaginal membrane, and numerous metastases in the broad ligaments and the recto-vaginal septum. Microscopically the tumor proved to be a typical round-celled sarcoma.

DEVELOPMENT.

Four theories of the development of the hymen have been advanced which may be briefly characterized as follows:

1. The hymen is the product of the Müllerian ducts (Kölliker, Dohrn, Nagel, Klein).
2. The hymen is the product of the sinus urogenitalis (Pozzi).
3. The hymen is the product of both the Müllerian ducts and the sinus urogenitalis (Schäffer).
4. The hymen is the product of the Wolffian ducts (Hart).

I begin with the last and chronologically latest theory which is advanced by D. Berry Hart,^{64 65} but was in somewhat similar form, published by v. Hoffmann⁶⁶ in 1878. Hart formulates his theory as follows: The hymen is formed by a special bulbous development of the lower ends of the two Wolffian ducts aided by an epithelial involution from below of the cells lining the urogenital sinus. The terminal parts of the Müllerian ducts are at first solid epithelial cords, the epithelial mass being derived from the bulbous termination of the Wolffian ducts. These Wolffian bulbs after having mapped out the vaginal portion of the uterus

and the fornices of the vagina, coalesce, break down in the center and form the lumen of the vagina. The coalesced Wolffian bulbs, then, protrude into the urogenital sinus and thus form the hymen. The epoöphoron, the paroöphoron and the Wolffian ducts near the uterus and upper part of the vagina are all useless and dangerous relics to women, giving rise to many pathologic conditions simple as well as malignant. Only at the lower end of the Wolffian ducts do we get an actual normal utilization in the development of the hymen, the relining of the vagina and cervix with an ectodermic multilayered epithelium and the opening up of the imperforate eminence of Müller where the Müllerian ducts end blindly.

This theory was accepted by Keith⁶⁷ and Garrigues⁶⁸ and seems to be supported by a case of persistence of the urogenital sinus recorded by Purslow.⁶⁹ This case is interesting enough to be quoted more in detail. A well-developed girl of 23 sought medical aid for dysmenorrhea. Micturition was always normal. The pubic hair was well developed. On separating the labia, there was seen an unusually well marked hymen having a crescentic opening in front, which would admit the index finger. Immediately within the hymen, but quite distinct from it, was a firm fibrous ring contracting the opening into the vagina, and just admitting the tip of the little finger, but the finger could not be forced through this narrowed part of the canal, which gave the impression of being about 1 cm. in length. A catheter passed through the hymeneal opening readily into the bladder, and urine was withdrawn. The clitoris was not enlarged. The constriction, together with the hymen, was divided by deep incision with a bistoury, and the orifice was well stretched until it would admit three fingers. It was then ascertained that the constricted portion communicated at its upper end with a capacious vagina, and that at the junction the bladder opened by an aperture which admitted the tip of the finger and appeared to have very little sphincter power. There was no trace of a urethra. In this report there are several important points of information lacking. From the history we do not know whether the patient, in her childhood, had suffered from any acute infectious disease which might have led to inflammation and consequent stricture of the vagina. What was the condition of the uterus and appendages? Was the dysmenorrhea due to a malformation of the internal genitals, or did it cease after the operation?

In Hart's theory there are several weak points. In the first

place, it is difficult to understand that an organ should form an intrinsic part of the human economy only at its lower end while the rest forms a dangerous anomaly. Secondly, systematic researches of other investigators result in an altogether different conception of the course of the Wolffian ducts. Until recently the majority of observers believed that the Wolffian ducts terminated at or near the cervix uteri in the upper parts of the vagina. This view can no longer be held. Beigel, Dohrn and v. Ackeren first described rests of the Wolffian ducts along the entire length of the vagina, and Klein,⁷⁰ in 1897, demonstrated in serial sections the course of the Wolffian ducts at either side of the vagina and the termination of these ducts in the hymen. These sections were taken from the genitals of the new-born and of a girl of 4½ years. The findings of Klein were confirmed by many observations of Meyer³⁰ in the fetus and new-born. He found in 17 cases larger remnants of the Wolffian ducts in the vagina and, especially, within the hymen. Here the ducts entering the base of the hymen from the posterior wall of the vagina, run upward within the hymeneal tissue and usually open at the outer side near the free edge. It must be noted that v. Ackeren, Meyer, Klein, and Groschuff, Seitz and Hengge, the last three working with Klein, actually found the Wolffian ducts *within* the hymen. Nagel suggests that the ducts of Bartholin's glands might be mistaken for the Wolffian ducts and I feel inclined thus to interpret the pictures given by Hart.

While Hart holds that the vagina is derived only in its upper two-thirds from the Müllerian ducts and in its lower third from the sinus urogenitalis, all other theories have as their premise that the vagina in its entirety is of Müllerian origin.

According to the next theory, that of Pozzi,³⁴ the origin of the hymen is intimately connected with that of the vulva. On either side of the sinus urogenitalis and below the urethra lie two corpora spongiosa which, after surrounding the meatus urinarius, extend upward to the base of the clitoris. From the superficial portion of these spongy organs which remain in fetal state, the hymen develops. Pozzi bases his theory upon the aspect of the external genitals and the analogy with the frenulum in masculine hypospadias, and upon the following clinical observations: (1) The existence of the hymen in total absence of the vagina; (2) the presence of a single hymen in cases of double vagina; (3) the existence of a urethral hymen, *i.e.*, a prolongation of the ring around the meatus, partly or even entirely covering this orifice

which goes to prove the close relationship between the different parts of the hymen and the ring which surrounds the meatus.

Cases of hymen existing in the absence of the vagina are occasionally found. In addition to those cited by Pozzi himself and by Neugebauer,⁴⁴ I have seen in recent literature reports by Loeffquist⁷¹ (10 cases), Krevet⁷² and Strauss.⁷³ On the other hand, in the majority of cases of total absence of the vagina, no trace of a hymen can be found. Loeffquist himself does not consider his cases as supporting the theory of Pozzi who, as he points out, ignores the results of embryologic studies altogether and thus denies facts verified by the microscope. In my opinion the microscopic examination of the atretic vagina or rather of the tissues behind the hymen will possibly throw light upon this point. The vagina must either have been normal and become obliterated afterwards or have been atrophic from the beginning. At any rate, the Müllerian ducts must have reached the sinus, for otherwise the origin of a hymen is unexplainable. In corroboration of this, absence of the hymen in absence of the vagina is the more frequent occurrence. An example is to be seen in the case recorded by Veit⁸³ in which there was a uterus bipartitus, but no trace of the vagina nor of the hymen could be found. Even according to Pozzi's theory, the hymen is only then formed from the vulva when there exists an opening which the corpora spongiosa can surround. Pozzi's second argument of the presence of one hymen in double vagina is balanced by observations of double hymen in double vagina. Only last year two further cases were observed by Benno Müller⁷⁴ and Marchand.⁷⁵

As to Pozzi's third point, the existence of a membrane partly or totally occluding the urethra may be admitted as of vulvar origin but need not necessarily be associated with the formation of the hymen. According to a recent article by Dickinson,⁸² this "urethral hymen" is a pathologic structure due to repeated traction and found only in company with hypertrophied nymphæ. In addition to these remarks, a case of persistent sinus urogenitalis reported by Kelly⁷⁶ is worthy of note. The patient, a nullipara of 46, had normal external genitals as far as the introitus of the vagina, where the only opening between the rectum and clitoris was found. There was no hymen, and the smooth orifice beneath the pubic arch had the form of a transverse slit. From this orifice a short muscular canal led directly into the bladder. Into this canal behind the orifice a double vagina opened. It is at this point, at the opening of the Müllerian ducts into the sinus,

that a hymen should be looked for, though Kelly does not make mention of it. The absence of an external hymen speaks strongly against Pozzi's supposition. In conclusion, Pozzi does not bring sufficient evidence to prove the fact that the hymen is independent of the Müllerian ducts.

Schäffer,¹³ upon a careful study of an unusually large material, propounds the following theory: In the fifth month of fetal life every hymen makes its appearance more or less distinctly in the form of two lamellæ (hymen bilamellatus) in such a way that the inner lamella is formed by the vagina, the outer by the vulva. Schäffer found this mode of origin 53 times in 190 specimens. In many instances the two lamellæ unite either at once or later; in more than one-fourth of his cases, they persisted more or less until full term, but rarely after birth. Each lamella is covered with mucous membrane on both sides so that the hymen bilamellatus, properly speaking, consists of four layers. Schäffer supports his theory with the following observations: (1) Frequency of a distinctly bilamellate form (28.8 per cent.); (2) unity of the outer lamella with a layer of vulvar mucosa around the urethral orifice and upward to the clitoris; (3) different stages of the coalescence of the two lamellæ by means of transverse processes or papillæ; (4) folds or ridges of mucosa which spring from the frenulum labiorum, the nymphæ and the "frenulum masculinum" and end in the outer lamella, usually at or near the free edge; (5) relation of the urethral orifice to the outer lamella; (6) difference in the form of the free edge of the outer and inner lamellæ; (7) difference in color and epithelial covering of both lamellæ; (8) possibility of dissecting the outer lamellæ from the inner; (9) analogy with the portio vaginalis uteri, the growth of which is, to a great extent, due to material furnished by the vagina; (10) cases of single hymen in double vagina; (11) cases of persistence of both lamellæ (hymen duplex); (12) cases of presence of hymen (outer lamella) in absence of vagina.

The painstaking researches of Schäffer deserve earnest consideration. A number of his observations coincide with those of Pozzi. The extension of the hymen beyond the urethral orifice, in Schäffer's description, corresponds to Pozzi's "bride masculine" or "frenum masculinum." The relation of the meatus urethræ, the folds from the surrounding vulva stretching to the outer surface of the hymen and the possibility of dissecting the superficial layer of the vulvar mucosa in toto including the outer

surface of the hymen, are observations common to both authors. Only the interpretation of these facts and the conclusions drawn therefrom are different. This is most noticeable in the arguments classified under 10 and 12.

There are several objections, however, to Schäffer's theory:

1. Schäffer states that in the first series of 103 fetuses, 42 had abnormal genitals. In a second series of 87 cases he gives no detailed data; altogether he found hymen bilamellatus 53 times in these 190 specimens. The large percentage of cases with abnormal sexual organs in addition to the comparatively small percentage of bilamellate hymens actually found, to a certain extent detracts from the value of these observations.

2. While a number of textbooks (Gebhard,⁷⁷ Chrobak and Rosthorn⁷⁸) reproduce Schäffer's statements without commenting upon them, later workers in the same field emphasize that they have not yet seen the bilamellate form in a single instance. I refer to Klein¹⁴ and Hart.⁶⁴ Nor have I been able to observe this formation in the seven fetal hymens of my collection. Since Schäffer found the bilamellate hymen in 28.8 per cent., one would expect to find it at least once in the dozen or more cases examined by Klein, Hart and myself. In only one instance, that of a girl of 20, I thought at first sight to have noted a case of hymen duplex (persistence of the two lamellæ). The hymen was well developed and of annular shape. Immediately behind the hymen there was a second, well-marked, fleshy fold springing from the left side of the vaginal entrance and running parallel to the left half of the hymen. At about the median line this fold began to converge slightly toward the hymen and ended in its posterior surface a little to the right of the median line. This fold was as high as the hymen itself and exactly like it in appearance. After cautiously pushing aside the hymeneal membrane it was seen that this fold was but the continuation of a longitudinal vaginal ruga which ran directly below the juncture of the posterior and left walls of the vagina. These longitudinal folds or rugæ are of ordinary occurrence in the lowest inch of the vagina. Fig. 7 (Case 4) shows this condition in an embryo of 25 weeks. Hart⁶⁴ also notes that the rugæ or columns of the lowest inch of the vagina run for the most part longitudinally; above this the vagina has its rugæ transverse. These longitudinal folds (Fig. 7) turn inward at the vaginal entrance and run parallel or but slightly converging to the posterior surface of the

hymen and fuse with the latter at irregular points, but, as a rule, below the free edge.

3. As the first formation of the hymen takes place in the 19th week, and as the lamellæ, according to Schäffer, persist more or less distinctly until term, the bilamellate form should be visible, at least remnants of it, in microscopic sections through hymens of a later fetal period. None of my sections, however, present this form. Moreover, the hymen of 25 weeks, pictured in Fig. 7, which simulates bilamellation, does not, microscopically, show two lamellæ, though the section comprises vulvar and vaginal portions adjoining the hymen. With Klein I consider the high fold usually found at the vaginal side as one of the numerous papillæ of the vagina and without importance in regard to the development of the hymen.

4. Schäffer mentions the difference in color and epithelial covering of the two surfaces. While I shall speak later of the epithelial coverings of the two sides of the hymen, I may say as to the difference in color that in the fetus I observed the entire hymen, both inside and outside, as white, exactly like the vagina, and contrasting markedly with the grayish-red appearance of the vulva. I observed a similar condition in the hymen of a virgin of 25.

Klein,¹⁴ in his studies of the development of the hymen, advances the following theory: The hymen is that part of the pelvic floor which is thinned out by the ampullary enlargement of the lower portion of the vagina. The anlage of the hymen is present at the beginning of the third month when the Müllerian ducts break through into the sinus urogenitalis. From the third to the fifth month, the vagina undergoes an ampullary enlargement in its terminal portion, which in its turn leads to a stretching and thinning out of the surrounding pelvic floor. I might suggest that this theory does not explain the formation of the annular hymen. It is only the posterior wall of the vagina which undergoes a dilatation thus producing the ampulla vaginæ; the anterior wall remains unaffected and, consequently, a symmetrical structure like the annular hymen is impossible.

Klein ascribes to the Müllerian ducts an active part in the formation of the hymen. In this respect, Klein's views coincide with the most generally accepted theory, that advanced by v. Kolliker,⁷⁹ v. Mihalkovicz, Budin, Dohrn and, especially, Nagel.⁸ According to these writers the development of the hymen is inseparable from the development of the vagina. In the human

embryo of 8 to 10 mm., the Müllerian duct on either side may be divided into a proximal and a distal part characterized by different kinds of epithelium. The proximal portion, which later becomes uterus and tube, is hollow and has cylindrical epithelium. The distal part, which becomes the vagina, has, in the beginning, no lumen, but is filled with large protoplasmic cells of a more cubical form. At about the third month, the lower ends of the Müllerian ducts in their downward growth reach the sinus urogenitalis and by the protrusion of their blind ends form the Müllerian eminence. From this eminence the hymen is formed. The finer details of this process may, to my mind, be conceived as follows. When the united Müllerian ducts reach the sinus urogenitalis they push the thin layer of epithelium lining the sinus forward, and by so doing they make this epithelium even thinner than before. This condition is clearly seen in Nagel's picture (Fig. 8). In this stage the lower ends of the Müllerian ducts represent a somewhat cone-shaped solid epithelial cord. The formation of a lumen proceeds from above downward, and this canalization corresponds with the curve of the ducts themselves with its concavity anterior. Therefore the point where the lumen of the ducts breaks through the solid end, is, as a rule, nearer the upper border of the conus, and so is responsible for the production of the semilunar form of the hymen which is by far the most common. The concave course of the Müllerian ducts is due to the curved abdomen of the embryo. Thereby every organ in the lower part of the body, the sacrum, rectum, genital tract and sinus urogenitalis, acquires a curved axis. The extremity of the conus (Müllerian eminence) with a more or less excentric lumen protruding into the sinus, consists, at first, only of the epithelium of the Müllerian eminence covered on the outer surface with a very thin layer of sinus epithelium. Only secondarily is this mass of epithelium invaded by connective tissue. According to Nagel the Müllerian ducts originally are composed of large protoplasmic cells of an epithelial character. Around this mass of cells which gradually becomes a tube, the mesodermal formative cells are grouped in a circular arrangement thus forming the first anlage of the connective tissue and muscular layer of the Müllerian ducts. In other words, the connective tissue appears after the ducts are established and grows in proportion to and together with the downward growth of the ducts. Thus, when the ends of the ducts protrude into the sinus in the form of an epithelial protuberance, their connective tissue comes down with

them, grows into the terminal conus and forms the inner or central layer of the protuberance.

If this be the true mode of origin, the hymen is a product of the Müllerian ducts exclusively. The epithelium of the sinus urogenitalis does not play any active part, but only covers the outer layers of the epithelium of the Müllerian ducts in the form of a very thin cuticle. Thus it is readily understood why the epithelium of the vulva can be dissected from the hymen as recorded above in connection with the theories of Pozzi and Schäffer.

The Müllerian theory is further supported by the following observation. It is asserted by a number of authors (Winckel,⁸⁰ Dohrn,¹¹ Pozzi,⁸⁴ Roze⁸¹ and others) that the outer surface of the hymen is different from the inner and resembles the structure of the vestibule in that it has, like the latter, no papillæ and that its epithelium is like that of the vestibule. My sections, however, described above, show that the vulvar surface has papillæ as well as the vaginal surface, and I infer the same from Schäffer's remarks on this subject. In my sections, the papillæ, it is true, are not quite as numerous nor are they as high and richly ramified as those on the inner side, but this difference is but comparative and can be explained by physical reasons. The hymen in the embryo and the infant, as all observers agree, protrudes into the vulva. It thus lies in close juxtaposition to the vestibule and its papillæ are subjected to a certain degree of pressure atrophy while the vaginal surface does not suffer any pressure from the yielding epithelium which at that time fills the vaginal lumen.

The vestibule itself has no papillæ at all; its surface in the vicinity of the hymen is perfectly smooth. It is covered with but a few layers of flattened epithelium while the vulvar surface of the hymen is lined with many layers of epithelium. The slight difference in the number of epithelial layers between the vulvar and vaginal surfaces of the hymen is, again, explained by the same physical reasons. These conditions are strikingly obvious in the section through the vulva, hymen and vagina of an embryo of 25 weeks (Fig. 1), detailed above. In another section through the hymen of a 7 months fetus the epithelium on the vaginal side is very thick; that on the vulvar side is only about half as thick. This latter epithelium appears compressed; the cells adjoining the germinative basal layers are markedly flattened instead of being polygonal as is usually the case in multi-layered pavement epithelium.

I am well aware that the form of epithelium, because of its

changeability, cannot establish a theory, but it can support views which are otherwise well founded. Embryologic studies and macroscopic or clinical observations alone cannot decide the question. It must be supported by histologic examination, the value of which has thus far been underestimated. Under this heading I should like to call attention to certain features of the connective tissue structure which to my knowledge have not heretofore been pointed out. In all sections examined the fibers of connective tissue are distinctly seen to run in a straight line from the vagina into the hymen. Account of this was given in the first part of this paper. It may here suffice to reiterate this observation. The great mass of the hymen appears as a direct continuation of the connective tissue of the vagina, and only at the base a few semi-circular fibers connect the hymen with the stratum of the vulva. The latter can by its looser structure be differentiated from the more compact vaginal and hymeneal connective tissue and so clearly shows the hymen to be of vaginal origin.

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TWO CASES OF ECTOPIC PREGNANCY GOING TO TERM. OPERATION. RECOVERY.

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(With five illustrations.)

DR. CORSON'S CASE.—Ectopic pregnancy in left tube and broad ligament going to term. Operation three weeks after the death of the child. Entire sac removed. Passage per rectum on the 75th day of a large abdominal pad left in the abdomen at time of operation.

Clarissa S., negress, æt. 35, married six years and pregnant for the first time. Has always had a painful menstruation lasting three to four days, with very little flow.

Had her last regular period on February 5, 1903, and soon after had nausea in the morning and could not eat what she usually liked. On March 9 had a slight show and each day there-

after till the 26th, but without any pain. On that day was taken with severe pain and vomiting, cramps and shooting pains in the lower part of the abdomen, apparently through the uterus. Had to go to bed. On April 9 there was another attack, even more severe, lasting until the 13th. Was confined to bed and sent for a physician who diagnosed peritonitis and told her she must have miscarried. The abdomen was very sore and she could not lie on the right side.

On May 3 she had another severe attack of pain lasting several days with a slight flow again. After that the flow ceased entirely and she began to grow stronger until she came to my office for the first time on June 19 to get a diagnosis, the physician who attended her having informed her that she had a tumor which should be operated upon. I made a digital examination and detected, as I thought, a normal pregnancy. With the stethoscope the placental bruit was very distinct. I gave her November 12 as the probable date of her confinement.

She felt the first movements of the child shortly after her visit to my office. During the summer she continued to have morning nausea and vomiting.

I saw her again on September 9 when I heard the fetal heart very distinctly. The movements of the child were very vigorous. She felt very well, barring an uneasy feeling in the abdomen and a constant pain on the right side.

On November 16 the movements of the child suddenly ceased, and she sent for me again. This was but four days later than the date I gave her for her confinement, counting 280 days from February 5, the first day of her last regular menstruation. I could not detect the fetal heart or placental bruit and I pronounced her child dead. I still considered the case a normal pregnancy, and as this intrauterine death of the child is common among the colored I advised her to wait till the uterus threw it off spontaneously.

I saw her again on December 1 and she complained of a very uneasy feeling in the abdomen. The examining finger could just enter the cervix and met with an obstruction on the right side giving the impression of a solid tumor. This was afterward found to be due to the uterus pushed over and pressed down by the gestation sac. The examination caused a good deal of pain and was followed by a bloody discharge. I now realized that there was trouble of some kind and advised her to enter the hospital and be examined under ether and have a proper diagnosis made.

She entered the hospital on December 6. Under good narcosis I dilated the cervix and passed my finger into the uterus and over its entire inner surface, removed with the finger a false decidua, and, of course, thoroughly satisfied myself that I had an ectopic pregnancy to deal with.

On December 7 I operated at 12 o'clock. The abdomen was symmetrical and the linea nigra very distinct. This latter sign is a very constant one in pregnancy among the colored and I have always laid much stress upon it. I found a large intraligamentous sac on the left side pushing the uterus well over to the right. About a quart of chocolate-colored fluid without any amniotic odor was drawn off by trocar. Enlarging the sac by tearing disclosed a full nine-months' male child, dead probably three weeks, in sacrum-right-posterior position. The placenta, an effete organ and partially decomposed, was peeled off the sac wall without any hemorrhage. The sac was then freed from many adhesions, especially to the ascending colon, down to the base of the broad ligament and tied off with strong silk. Remnants of the ovary and tube were just discernible. The adhesions were soft and gave way readily and this part of the operation was completed in forty minutes. The abdominal cavity was thoroughly washed out with salt solution, and as the pulse was thin and rapid, the abdomen was sewed up with the peritoneal cavity full of salt solution.

The child had evidently been dead some time, was of full nine months' growth, and its weight estimated at 9 pounds. The placenta weighed 12 ounces and the sac 15 ounces. The hospital chart showed a temperature of 102° on admission. This dropped to normal after operation, and in the following two weeks rose twice to 101° only. At the end of ten days the patient began to complain of colicky pains, but as she stated that she had had these pains at various times during her pregnancy nothing was thought of them. The bowels had moved spontaneously on the second day and were afterwards easily moved by small doses of oil or cascara. She returned home in the third week.

But these pains continued and increased in violence, requiring anodynes in spite of thorough opening of the bowels. Twice she passed a lumbricoid worm. The abdomen was soft, tender only on deep pressure, and without any constant area of excessive tenderness. The pain was located mostly at the pit of the stomach, was colicky and bearing down, and came on at intervals of twenty minutes to a half hour. There was practically no fever.

While in pain the pulse was quick, 110-120. The suffering was very great and several ounces of chloranodyne were taken.

On account of the many adhesions found at operation I was inclined to fear that some bands were partially constricting the bowel. The passage of two lumbricoid worms suggested more of these parasites, and calomel and santolin were given without result.

The mystery was solved on February 20, 75 days after the operation, when, feeling an obstruction in the rectum, she pulled out a large abdominal pad of gauze measuring 36x18 inches which, of course, had been left in the abdomen at the time of operation.

From that time the pain ceased and the patient expressed herself as feeling well in every way, barring a slight soreness. She left for the country to pick up from her two ectopic experiences.

There are several points of great interest in this case. When the patient first came to me I got a very imperfect history from her of her previous condition and of the attacks which, on future investigation, pointed so strongly to an ectopic pregnancy. The long period of sterility, the sudden attacks of pain, with symptoms of peritonitis and miscarriage, and the irregular flow, followed by the evident signs of advancing pregnancy, were very characteristic and will be found in the many histories of ectopic pregnancy already published.

The location of the pain and tenderness on the right side only is worthy of notice. This seems to have been caused by the pushing of the uterus over to the right side while the growing gestation sac caused no pain. It was this misplaced uterus to the right which gave to the examining finger the impression of a tumor blocking the cervix on that side. The simple digital examination with the bimanual was quite unable to diagnose the trouble. The gestation sac kept well in the midline, and the symmetrical abdomen with the marked linea nigra looked very like a normal pregnancy.

A diagnosis could not have been definitely made without exploring the uterus, and with the doubt in the case there was the danger of bringing on abortion or premature labor by any further efforts to clear up that doubt. When the child was dead and the full period of gestation passed, the intrauterine examination was called for and, of course, settled the diagnosis, presupposing that the examiner assured himself that there was no double uterus. The delay practically concerns the child's life only, for the moth-

er's interests are conserved by waiting three or four weeks past the full gestation period until the placenta has become an effete organ, which can be removed readily at the operation without fear of hemorrhage.

The death of the child just at, or very shortly after, the full term of utero-gestation shows us that this period holds as well outside as within the uterus, and probably depends upon the placental life which is quite definitely fixed. This organ makes a contract with the body to work for a certain length of time and when that time is up quits work just like any workman under a labor union.

With the experience of my own operation and that of Dr. Van Marter's case, in which I assisted him, the complete removal of the sac seems in every way the proper course. When the operation is attempted before the death of the child the conditions are different, and it will be found necessary in the majority of cases dependent chiefly upon the placental site, to leave the placenta severely alone, and stitch the sac to the abdominal incision. The sac rapidly contracts around the placenta which gradually sloughs away. It is only when the sac with its adherent placenta can be entirely separated from the abdominal and pelvic structures, and tied off like any intraligamentous cyst that the operation can be fully completed at the time.

At the late operation the surgeon may be tempted to treat the sac by stitching it to the abdominal incision on account of the many adhesions, but it is surprising how a little patience and care will overcome this apparent difficulty, and the complete removal of the sac turns out to be by no means the difficult task it seemed at the beginning of the operation. Certainly it is the operation which should commend itself on account of its thoroughness, and it is bold thoroughness which is the watchword of success in abdominal surgery. However numerous the adhesions the peritoneal cavity is left in a better condition than after the removal of generally adherent pus tubes.

Nature's treatment of the gauze pad left in the abdomen and her removal of it through the bowel seems really more wonderful than all the other features of the case, for it brings out in a startling way the intelligence of this so-called blind vital force. Surely it is comparable to the instinct of animals, only it represents the combined instinct of many billions of animal cells all working toward the accomplishment of a definite object.

As to the exact way nature accomplishes the removal of the for-

eign body from the peritoneal cavity I am not aware that the method and its different steps have been definitely ascertained, though I think this could easily be done by experiments on dogs. With what we know about the peritoneum, its powers of absorption both of fluids and gases, its tolerance of many pathological conditions, and its action toward the gauze drains that we leave in the abdominal cavity for two, three or even more days, it is not so difficult to conceive of a way out it could arrange for in a case

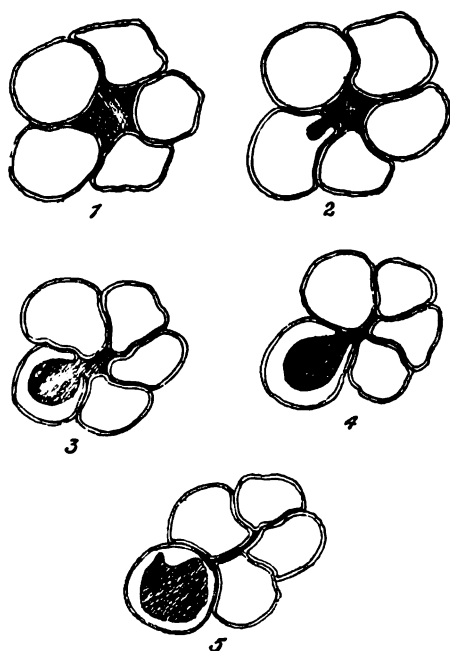


Diagram showing method of passage of a gauze pad from the peritoneal cavity into the lumen of the intestine.

like my own. Certainly there are a good many cases on record where sponges and gauze pads have been eliminated by the bowel.

In removing gauze drains on the third day, that portion of the peritoneum which comes in contact with the gauze has a velvety appearance, due to little granulations which protrude into the meshes of the gauze, so that the peritoneal surface is stuck to it and requires often considerable force to free it. It is easy to imagine how the coils of intestines, which happen to be in contact with the gauze, surround it so as to form a sort of secondary peritoneal cavity around the foreign body. The peritoneal surface

becomes agglutinated to the gauze and contracts around it. I can conceive of the bowel wall thinned out by the granulations pushing into the gauze, the bowel wall going through the gauze rather than the gauze through the bowel wall, the process taking place without any suppuration, though a partial suppurative process probably takes place as soon as the gauze enters the lumen of the gut. With this beginning made, nature has practically accomplished her object. The gauze cavity contracts in proportion as the gauze enters the bowel, and becomes obliterated as the gauze finally passes entirely into the bowel. I have made a series of five diagrams to show my conception of the case.

Dr. Van Marter's Case.—Ectopic pregnancy, twelfth month of impregnation, operation, complete removal of sac, impregnation within two months of discharge from hospital and normal delivery one year and one month from date of operation.

Georgia H., colored, aged 26, secundipara, school-teacher, was first examined by me October 10, 1901, and on the following day, under anesthetic, with a consultant.

The history obtainable was vague and unsatisfactory. Twelve months, or a little more, previous to examination she had missed a menstrual period, and presumed herself pregnant; a month later she had a very slight show, with much pain—in her case unusual—and ever since has menstruated, although this was scanty and of shorter duration than before. In January she noticed a marked enlargement of the abdomen, which progressively increased, and, having much discomfort, even pain, though vague and with no special localization, she consulted a physician. I was never able to find out what his diagnosis, or treatment, was. In July she had so much pain in the abdomen—at which time it had become as large as that of a woman at full term—that a physician was called again. For a while in August and September, the patient had a little fever, night sweats, and lost flesh, and during this time the abdomen decreased somewhat in size, which was attributed to the new treatment.

Examination, under anesthetic, showed a very firm, elastic, ovoid tumor, whose apex pointed toward the right ovary—reaching slightly above the umbilicus. Palpation could detect no contents—such, for instance, as a fetus. The uterus by palpation was shown to be free, and practically of normal size, which was confirmed by the insertion of a sound.

A provisional diagnosis of ovarian cyst was made by the con-

sultant and agreed to. Operation was urged, and was accepted by the patient.

October 18, operation. Upon opening the abdomen, a reddish, thick cystic membrane came into view to which the small intestines were everywhere adherent. Upon incision this wall seemed to be double. A trocar, shoved well in, disclosed no cystic fluid, but a brownish black fluid, quite odorless and very like meconium, escaped in slight amount, not over three or four ounces. Upon free incision, the knife went through a shriveled, atrophied placenta, from which there was no hemorrhage and a slightly macerated, very large infant was removed (which must have weighed, at a rough estimate, at least nine pounds).

It was suggested at the time that owing to the extensive adhesions the sac should be packed and drained but I preferred excision in spite of the enormous extent of adhesions. This was slowly done and but in one instance, all injury to bowel avoided. Once, I inadvertently stripped off a bit of peritoneum from the bowel, which was, however, carefully replaced. When the sac was entirely freed, I noticed with regret that several long strips of sac tissue remained on the longitudinal axes of the small intestines (which had completely surrounded the sac) and much against my desire I used a small gauze drain.

Inspection of the ovaries and uterus showed them to be healthy and so nothing was done further.

The abdomen, excepting the small opening for drainage, was closed in three layers, in very hasty fashion, the operation having already been unduly prolonged owing to the extent of adhesions.

The patient made an uneventful and rapid recovery without signs of either sepsis or shock. The drainage hole closed entirely within sixty days. Menstruation was regular until February, 1902, when a period was missed, and two months later upon examination I found the patient pregnant, this time, however, a normal uterine impregnation.

It was with considerable fear that I looked forward to labor at full term, particularly because of the adhesions which must of necessity have formed around the drainage route; but nothing untoward occurred and on November 18, one year and one month from the date of operation, she was delivered of a healthy girl weighing eight and a half pounds, having a very easy labor. Careful examination of the abdominal wall, both during and after labor, failed to show any signs of weakness.

In recording this case it is my desire particularly to call atten-

tion, first, to the great amount of handling of the bowel this patient stood without signs of shock.

Second, to the fact that while long narrow strips of sac wall were left on the intestines, no suppuration or other ill results followed.

Third, the gauze drain evidently left behind no permanent or fixed fibrous bands, as there were, during pregnancy or delivery, no symptoms which could lead one to think so.

Fourth, the examination before operation, of the uterus, which was of practically normal size, showed that if the uterus had enlarged at all during term, it had, after this period, returned to its normal condition: which was a very misleading condition for the examiner.

THE STREPTOCOCCUS IN GYNECOLOGICAL SURGERY.¹

BY

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AND

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BACTERIOLOGISTS have still much to learn and teach us about the streptococcus, especially with reference to the differentiation of this organism into distinct species or varieties. Clinically, however, we know a good deal about this organism, and experience has taught us to regard its capacities for evil with respect not altogether unmingled with a wholesome dread. We know that the streptococcus in some form or other is the pathogenic agent in erysipelas, acute septicemia, the puerperal fevers and post-operative peritonitides, and thus far researches have taught us to wonder not so much at the frequency, but rather at the relative infrequency of acute processes due to the agency of the streptococcus pyogenes. Döderlein has shown that of the vaginal secretions taken from about 200 cases, nearly 100 were found to be abnormal, and that 10 per cent. of these pathological secretions contained the streptococcus pyogenes, which in 50 per cent. of the cases at least was pathogenic for animals. Under these circumstances when we remember the bruised and lacerated con-

¹ Read before the American Gynecological Society, May, 1904.

dition of the genitalia after labor, which would naturally offer easy access to invading organisms, it would seem surprising that puerperal infections are not much more common. Czerniewski found streptococci in the lochia of 33 out of 81 women suffering from puerperal fever, whereas in those from 57 healthy women he was able to find this organism only once. In ten fatal cases he demonstrated its presence in the various organs of the body after death.

On the other hand Pryor reports 36 recoveries in 37 cases of puerperal sepsis from which the streptococcus pyogenes was isolated, but attributes his good results to the effects of the iodine which was set free from the iodoform gauze employed by him. Unfortunately our own experience is far less encouraging, and after carefully explaining errors in technique, we have been forced to the conclusion that the organism with which Pryor had to deal was either less virulent than the form encountered by us, or that his patients had more resistance—or that his good results were possibly due to a combination of these two factors.

In order to arrive at some definite conclusions with reference to the streptococcus pyogenes as a cause of death in our own work, we have made an analysis of all our cases in which this organism has been found during the past six years. It will be shown from our observations that quite a large number of our patients died, and one was unimproved. It will also be noticed that in the great majority of cases in which this organism was met with, there was a previous history of infection following labor, or an induced criminal abortion.

In the analysis of all cases the points noted were as follows: Name; age; condition; occupation of the patient; number of children and ages; miscarriages; most frequent symptoms; temperature and pulse on admission; highest temperature; highest pulse; lowest temperature; lowest pulse; average maximum temperature; average maximum pulse; lowest maximum temperature; lowest maximum pulse; leucocytes; operation; results; urinalysis; drainage; condition of the appendix; suppuration; class according to the operation.

Abortion Cases (including a few cases of labor after which treatment was necessary):

Total number of cases	137
Average maximum temperature	100.8° F.
Average maximum pulse	114

Operations.

Abdominal and vaginal	3
D. & C. with irrigation	71
D. & C. with irrigation and vaginal puncture	29
D. & C. (following labor with irrigations)	2
D. & C., vaginal puncture and irrigation (following labor) ..	3
Pelvic abscess; vaginal puncture.....	1
Miscellaneous operations	6
No operative procedure	12

Abortions completed in hospital	{ (None streptococcus) }	..	10
	{ (One died) }		

Recoveries 104 or 75.9 per cent.

Improved 17 " 12.4 " "

Unimproved 1 " .8 " "

Died 15 " 10.9 " "

Operations in the case of the patients who died:

Abdominal and vaginal.....	2
D. & C. and irrigation	5
D. & C. and irrigation and vaginal puncture	5
D. & C. and vaginal puncture (following labor).....	1
Miscellaneous	1
Abortion completed in the hospital.....	1
	—
	15

Streptococcus pyogenes in cases of abortion or following labor:

Total number of cases 16

Average maximum temperature 101.6° F.

Average maximum pulse 124

Operations.

Abdominal and vaginal	3
D. & C., irrigation.....	2
D. & C., irrigation, and vaginal puncture.....	6
D. & C. and irrigation (following labor)	1
D. & C., irrigation, and vaginal puncture (following labor) ..	4
	—
	16

Recoveries 4 or 25 per cent.

Improved 3 or 18.75 per cent.

Deaths 9 or 56.25 per cent.

In 16 then, of the 137 cases, the streptococcus was found. The total number of all our cases (from all sources) in which the streptococcus was found is 40. Consequently, those in which this organism was found following an abortion or labor formed 40 per cent. of the total number of streptococcus cases from every source.

Operations in the Cases which Died.

Abdominal and vaginal	2
D. & C., vaginal puncture and irrigation	4
D. & C. and irrigation (following labor)	1
D. & C., irrigation and vaginal puncture (following labor)....	2

Furthermore, we find 5 cases and 1 doubtful case which were operated upon here (abdominal operation) not for abortion, but in which there was a history of a previous abortion or labor followed by chills and fever and other symptoms pointing to infection, mild or otherwise.

Cases in which the streptococcus pyogenes was found (from all sources) :

Total number of cases.....	40
Average maximum temperature ...	101.2° F.
“ “ pulse	116

Operations.

Abdominal operation only	5	} 19; of which 7, or 36.8 per cent., died.
Abdominal and vaginal	14	
D. & C. and irrigation (following abortion)	2	
D. & C., irrigation and vaginal puncture (following abortion)	6	16 cases in which the vagina alone was opened; 6, or 37.5 per cent., of the patients died.
D. & C., irrigation and vaginal puncture (following labor)	4	
D. & C. and irrigation following labor ..	1	
Pelvic abscess evacuated by vaginal puncture	1	
Miscellaneous	7	
Recoveries	20 or 50 per cent.	
Improved	6 “ 15 “ “	
Deaths	14 “ 35 “ “	

Operations in the Fatal Cases.

Abdominal operation only	4
Abdominal and vaginal	3
D. & C., irrigation and vaginal puncture following abortion	4
D. & C., irrigation and vaginal puncture following labor	2
D. & C. and irrigation (following labor)	1

Of these 14 deaths in the streptococcus cases, 9, or 64.3 per cent., were in cases following labor or abortion.

We find that in all cases the streptococcus was found alone or in combination in the following order of frequency: (1) Streptococcus alone; (2) Streptococcus and Staphylococcus aureus; (3) Streptococcus, Staphylococcus aureus and B. coli communis. As to the regions from which these organisms were obtained we might say that in all cases (except 3 in which they were found in the vagina), the organisms were obtained from the uterus, the adnexa, the cul-de-sac or from several of these situations. In other words the organisms were present in places which were admittedly not their normal habitat.

In the past six years we have had 724 abdominal sections with a total of 25 deaths—a mortality of 3.45 per cent. In 7, or 28 per cent. of the deaths, the streptococcus pyogenes was demonstrated.

Number of streptococcus cases in the abdominal sections that recovered	12
Number of cases operated upon by abdominal section	19

Number recovered: 12, or 63.2 cent., leaving a mortality of 36.8 per cent. for the streptococcus cases in which an abdominal section was carried out.

702 ROSE BUILDING.

THE RESULTS OF "SUSPENSIO UTERI" (KELLY'S OPERATION) IN WASHINGTON, D. C.¹

BY

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SINCE the efforts of the earlier gynecologists were directed toward repair of perineal and vaginal accidents due to parturition rather than to intra-abdominal work, it was quite natural that the treatment of uterine displacements by the abdominal route should be perfected by those who favored the direct method of dealing with these conditions. Accordingly the names of Tait and Olshausen are connected with the early abdominal treatment of the various displacements of the uterus and they were really the first to suggest the suspension of the uterus, although we all admit that Dr. Howard A. Kelly deserves the credit of popularizing the method which we shall mention this evening. The surgical treatment of uterine and ovarian displacements now claims as much attention as the accidents due to parturition, or those due to the invasion of infectious disease. Ten years ago many of us hesitated to suggest an operation merely for the relief of a retroversion. The symptoms due to this form of displacement were vague and but imperfectly understood and we often found women who had displacements who had but few symptoms—hence it was quite a matter of debate, and much doubt was felt as to the propriety of opening the abdomen for such an "innocent" or "unimportant" indication. But we have seen how often uterine displacements have aggravated other conditions; how it is that these displacements are the indirect, if not the direct cause of many serious if not fatal conditions, and now we consider a displaced uterus a menace to health, especially if its possessor is a young woman, or within the childbearing age.

In looking about for some suitable method which would prove satisfactory as a substitute for pessary wearing with its many disadvantages, and which would prove adequate and permanent, yet without serious embarrassment to the parturient woman we were led to try the method known as "suspensio uteri," or "ventro-suspension," or "hysterorrhaphy;" the latter name

¹Read before the Washington Obstetrical and Gynecological Society, April 1, 1904.

having been given the operation by Dr. Kelly, who published his first paper with this title, in April, 1887.

Olshausen had preceded Kelly by a few months, his paper bearing date of November, 1886.

The great popularity of Kelly's operation would appear to be due to the frequent necessity for opening the abdomen in order to treat some condition associated with retrodisplacements. It is quite probable that the Aliqué-Alexander-Adams operation would have been more commonly performed, but for this fact. The abdomen once open in the median line, one naturally resorts to either suspension or some operation upon the ligaments, rather than to make additional incisions over the abdominal rings, for cure of displacements. As yet we have found that nearly all operations upon the round ligaments give a large proportion of failures, while the rather recent method of shortening the utero-sacral ligaments is practiced by a very limited number of operators.

Finally a rather strong point in favor of ventro-suspension is that it generally succeeds in holding the uterus in position and its new position does not interfere with the progress of labor. All of the "difficulties" are due to "fixation," and while the operation may not be intended for this purpose, a certain number result in firm adhesion of the uterus to the abdominal wall instead of the formation of a suspensory ligament. The importance of careful selection of cases cannot be overestimated. There have been many operations of this kind performed upon neurotic women who were not cured of their neurasthenia by operation although their pelvic organs may have been placed in a fairly normal position.

Believing as we do that the method of Dr. Kelly has a distinct field of usefulness and having performed the operation many times with but little danger or annoyance to any of the patients who had become pregnant, we have corresponded extensively with our local physicians in order to ascertain their results; and the following summary will approximately give the results:

Number of operations.....	767
For Retroversion	478
For Retroflexion	64
For Prolapse	42
Not stated	183
Number of full term deliveries.....	49

Comment: The number of operations is not so large as we had supposed. The members of this society report 588 operations.

We note with satisfaction the comparatively small number of operations for "retroflexion" and the large number of those done for retroversion with adhesions, or when the abdomen was opened for an additional reason.

One operator with one hundred cases reports 75 per cent. symptomatic cures, and practically all results satisfactorily permanent. Another gives one hundred and twenty-seven operations with relief of symptoms in seventy-five per cent., and from imperfect reports (which are to be questioned) assumes about this (25 per cent.) percentage of failures in keeping the uterus in position.

Another operator with one hundred and fifty cases assumes that nearly all of his patients are relieved of their symptoms and also have retained the organs in position. Another operator with over one hundred and fifty cases, reports 85 per cent. of cases cured and with two operative failures. The remaining reports show an almost perfect record of success; all of the reporters claiming symptomatic cures and but five returns of the uterus to retrodisplacement; three of which had "prolapse." Five deaths are reported, none of which were clearly due to the suspension. In all of the patients operation was demanded and celiotomy was necessary for other reasons in addition to the displacement. We are led to infer that the relatively small number of pregnancies reported, means that these women were surgically treated for salpingitis and other results of infection in which the displacement was only a factor and by no means the worst or most serious condition present.

Some of the reports call attention to the benefit to be obtained by the operation in the treatment of sterility. Several operations have been performed for this condition, the only symptom present demanding treatment.

The replies to the question regarding prolapse are not quite as definite as we would desire, for a distinction has not been made between "fixation" and "suspension" by many of those who replied, nearly all of the operations for prolapse being merely a rather more extensive or careful suspension, the result being the formation of a suspensory ligament in every case. The return of the uterus to its previous position may be roughly estimated at one per cent. Information upon this point

is rather suggestive, for nearly all of us know more about the failures of other operators than we do of our own.

The relief of symptoms must be classified in two categories; those relating to organic disease or displacement of the pelvic organs, and the functional diseases of these organs and the neurones. Beyond question and with great unanimity the medical profession agrees upon the surgical treatment of the infectious diseases of the pelvic organs of women; but not so with the other diseases. We believe that in a majority of operations the large percentage of reported cures of displacements is found in the cure of the disease associated with the displacement. Many report the entire number of their operative cases cured of all their symptoms. A smaller number of operators with a more extensive operative list are not so sanguine of their success, and place the percentage of cures at 75 to 85. Two observers who have not tried the operation, but who have clinical opportunities which entitle their opinion to respect, report adversely and give their unqualified disapproval of the operation from theoretical and practical points of view.

The number of confinements is disappointingly small, many having been reported from memory only, and but few have kept notes or accurate records of these cases. Our inability to follow up the average hospital case is the chief reason for the failure in reporting large numbers. It is our opinion that many of our patients have been delivered by physicians or others who knew nothing of a history of operation upon the patient. Still there is ground for the opinion that nearly all of these women were sterile previous to operation, owing to the conditions which demanded operation, and each successful delivery of a living child under such circumstances is a triumph for surgery and obstetrics, and incidentally for the operation practiced. One, or possibly two, Cæsarian sections have been performed at Columbia Hospital upon patients having had a fixation of the uterus where a suspension was intended. One of these occurred Dec., 1903, in the service of Dr. Fry. A firm broad band of adhesion was found between the fundus and left anterior surface of the uterus which held it forward and prevented its ascent into the upper abdomen. The cervix was correspondingly high and pointing backward so that delivery per vias naturales seemed impossible. The operation was a distinct success and the patient recovered without a bad symptom. The adherent band was allowed to remain.

Letters from various physicians report one or more deliveries

in women having had "suspension." Dr. Brumbaugh used forceps in one case, because "the pains were inadequate." He makes no mention of other difficulties. If one can judge by reports the labors were generally uninfluenced by the suspension. One report made to me by the late Dr. Stafford of a private case occurring ten years ago, and also one by Dr. Suddarth recently, occurring in a patient treated at Columbia Hospital, show that the cervix was high and pointing backward, necessitating clever management of the delivery in order to avoid some form of obstetric operation. In the case attended by Dr. Stafford the difficulty was overcome by traction upon the anterior cervical lips, and later elevation of the same above the pubic arch. Dr. Suddarth attended Mrs. C., on —, 1901, who had been operated upon by the writer two years previously. The patient had pro-cidentia with the attendant conditions, necessitating anterior and posterior colporrhaphy besides the suspension. Pregnancy occurred two years later. Dr. Suddarth found the cervix very high and posterior, and delivery at first appeared impossible; but the position of the os was changed markedly by pressure of the fundus upward and backward, and delivery was accomplished with the patient upon her side. Dr. Suddarth knows that this patient's uterus was in position two years later, but she now reports a bearing down of the uterus against her perineum, but refuses any examination by either Dr. Suddarth or myself so that we cannot confirm her statement.

The operation is opposed by two classes of physicians. One consists of those who object to any operation which limits the mobility of the uterus, and which according to their claim places the organ in an abnormal position. We think their idea is that a suspension means an "overcorrection." These gentlemen being theoretically opposed, consequently are prepared to find failures in the work of those who believe in the usefulness of the operation. They find many women having had the operation, who regret that it was performed. It is not our purpose just here to combat their opinion or belief.

Another class consists of those who having tried the operation have abandoned it, yet believing in the necessity for some operation for the relief and cure of displacements have resorted to other expedients. It is a well known fact that a ventro-suspension may permit the uterus to descend below the normal position, and in certain instances the cervix to press very far forward. Of course this is generally in women who have sus-

tained some form of injury to the pelvic floor, but still it gives the objectors an opportunity to oppose the operation and point out its defects. We therefore, have one or more members of this society who, after a large experience with suspension, have abandoned it for very good reasons to be sure, even if they have not succeeded in finding a substitute which is as satisfactory to them as to the great majority of gynecologists. It is well known that Dr. Kelly made an effort to overcome the tendency of the cervix to press far forward by suspending the uterus from a point posterior to the fundus. While this does favor the correct position of the uterus to some extent, we believe many surgeons object to the method for two reasons: First, because the fundus is held nearer to the under surface of the incision during convalescence, which permits additional fixation should the wound become infected, and also because the intra-abdominal pressure would, and really does, overcome any benefit to be derived from this difference of attachments, and, secondly, should the uterus with posterior suspension become impregnated there would be additional strain upon the posterior uterine wall and an additional portion of the anterior wall would be thrown out of commission because it cannot readily dilate as the uterus develops.

It is claimed by some that abortions and miscarriages are due to the operation, and this may be true to some extent, yet we are confident that these patients would not have conceived at all but for the operation.

Speaking personally, we are content to retain this operation among the very useful and important methods of treating retro-displacements; although we are limiting its application as time goes on. One should not rely upon "suspension" for prolapse, even when added to plastic operations upon the pelvic floor, but rather upon "fixation" instead. Everyone avoids "fixation" in childbearing women, and I firmly believe most of our gynecologists, even, oppose "suspension" when the patient is quite young and has never borne a child. After two or three children are born one rarely hesitates to advise it. As an alternative, we are now frequently using Gilliam's operation, which really suspends the uterus by means of the round ligaments which are brought through the recti muscles and there firmly secured.

The result of our inquiry shows that suspension of the uterus is comparatively free from danger to the parturient woman and that the operation is the chief reliance of our local physicians and surgeons for the surgical treatment of retrodisplacements. Our

correspondence, however, reveals the fact that a large number, perhaps the majority of our physicians in general family practice, do not advise their patients to have this or any other operation performed for displacements.

STONELEIGH COURT.

HEMORRHAGE BEFORE, DURING AND AFTER LABOR.¹

BY

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New York,

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THE subject of hemorrhage before, during and after labor, which your presiding officer has assigned to me is of most practical importance and I regret that the time at my disposal permits me to call your attention to none but the most important phenomena.

Thus I can only mention hemorrhage from the clitoris, perineum, vagina and cervix; also hematoma of the vulva, which, as you know, is caused by submucous laceration of adjacent blood-vessels. The latter accident, comparatively rare, is, like the others, best treated on general surgical principles.

Strictly speaking, I should also include hemorrhage from rupture of the uterus, but this is too important a subject to pass over with a few remarks and for this reason I will omit it entirely.

Thus I shall limit myself to hemorrhages due to a *premature detachment of the normally implanted placenta, placenta previa and post partum hemorrhage*.

To my mind there is nothing so alarming, eclampsia not excepted, as sudden severe hemorrhage during labor. Everything appears to progress smoothly, nobody thinks of the possibility of hemorrhage, when, without warning, the patient, who but a few minutes before was happy with the prospects of motherhood, is brought to the brink of the grave.

Who under such conditions will act quickly and correctly, must not only preserve his composure and presence of mind, but also be fully acquainted with causes of hemorrhage and the most approved methods of treatment.

The cause and methods of treatment will, therefore, be the subject which I shall endeavor to present to you.

¹Read before the Eastern Medical Society, March 13, 1904.

Accidental hemorrhage is due to the premature separation of the normally implanted placenta. Its etiology is not quite clear and various conditions are its probable cause.

A case of accidental hemorrhage reported by me about ten years ago (AMERICAN JOURNAL OF OBSTETRICS, 1893) occurred in a case of *exophthalmic goitre*; and as other authors report similar experiences, I am induced to consider Graves' disease a potent etiological factor, the immediate cause being vasomotor disturbances, admittedly present in this disease. A sudden dilatation of the uterine blood-vessels may lead to an extravasation of blood upon the placental surface and consequent separation.

Traumatism, direct or indirect, and emotions sufficient to arouse uterine contraction are stated to be a cause of accidental hemorrhage. *Emotion* is a powerful factor in determining a sudden flow of blood to the uterus and, aided by irregular uterine contractions, may cause a hemorrhage at the utero-placental union. *Hydramnios*, *multiple pregnancy*, *unusual shortness of the cord* and *anatomical abnormalities* may all produce premature separation, but, to come to the point, the most important factors are undoubtedly *syphilis*, *nephritis* and *uterine tumors*—in fact, all conditions which will lead to pathological changes in the placenta, especially its blood-vessels. Some authors claim that premature separation can never take place in a normal placenta.

Discussing *the symptoms* of accidental hemorrhage we must differentiate between *concealed* and *open* hemorrhage. In the former the blood is retained within the uterine cavity and it occurs if the presenting part fills the lower uterine segment or the placenta remains attached throughout its circumference. The symptoms first engaging attention are attributable to loss of blood. These vary in intensity, are accompanied by shock, the result of hemorrhage and uterine overdistention. *Abdominal pain*, although invariably present, differs in both character and severity in different cases. The uterus is *abnormally large* and that part which corresponds to the placental site *bulges* and is exceedingly *tender* and *painful to touch*. The fetal parts can no longer be felt and the heart sounds are altered or absent. The absence of placenta *previa* confirms the diagnosis, especially if there is also external hemorrhage. In concealed hemorrhage the prognosis for both mother and child is very grave, while in external hemorrhage the mother's chances are better.

In shaping the mode of treatment, only the mother should be considered. Its object is *delivery at the earliest possible moment*,

for the bleeding cannot be checked unless the uterus is empty. With the soft parts dilated or dilatable, version, forceps or craniotomy should be performed without delay. If the cervix is still intact open it through incisions as advocated by Skutch and Dührssen. Before, however, incising the cervix it is essential that the supravaginal portion be dilated. This you can readily accomplish with metal dilators, the fingers or a Barnes' bag. You will probably say or think "these are radical means." So they are, but the patient's desperate condition demands active interference; it is her sole chance. So-called "conservative treatment," which is equivalent to doing nothing, allows the woman to bleed to death without giving her a helping hand and a chance for her life.

If a placenta is attached to the lower uterine segment it is called *placenta previa*. This means that the placenta blocks the way, thus interfering with the normal progress of pregnancy and delivery of the child. The etiology of placenta previa is not definitely agreed upon; it is, however, a known fact that diseased conditions of the endometrium and uterine subinvolution predispose and are commonly associated with abnormal implantation of the placenta. The main symptom of placenta previa is hemorrhage occasioned by separation of the placenta from its uterine attachment and consequent tearing of utero-placental blood-vessels. This hemorrhage is rare before the middle of the seventh month and at times does not appear until the end of pregnancy. Its amount varies, depending entirely upon the degree of separation and injury to the blood-vessels. The first hemorrhage, if sufficiently profuse, may destroy life, especially if a large terminal vein or sinus is injured.

The diagnosis of placenta previa should not be difficult, as the examining finger readily recognizes the spongy placental tissues.

In no other class of cases is the fatal or favorable termination dependent so much upon the management and method of treatment adopted. To my mind that method is the best which seeks to decrease the loss of blood to a minimum, aims to save the mother and disregards the child's chances of survival entirely. It is not my purpose to attack or defend the various methods advocated—unfortunately, obstetricians are not all agreed—but I shall confine myself to briefly relating the treatment which has served me well in many trying cases.

If I see a case of hemorrhage, with cervix not dilated, I immediately tampon the vagina with iodoform or sterilized gauze, no

matter whether the woman has labor pains or not. It is essential that the tamponade be firm, especially the fornix vagina must be thoroughly packed. This in many, yes, most cases, suffices to arrest the bleeding, succeeds in bringing on labor pains or increases the severity of those existing. Should the cervix permit the introduction of one finger, then I advocate rupture of the membranes. This is especially valuable in marginal implantation and rarely fails to arrest the bleeding. If the hemorrhage is profuse and the major portion of the placenta occupies the cervix, combined version is the treatment par excellence. To perform a version successfully, it is necessary for the woman to be narcotized. The whole hand is introduced into the vagina (half the hand or fingers not being enough) and although the cervix may admit only two fingers, the child can usually be turned without much difficulty. One foot is brought down and out of the vulva, the breech remaining in utero, compressing the source of hemorrhage and thus forming a most efficient intrauterine tampon. I decidedly oppose the forcible extraction of the child through the partially dilated cervix and shall never fail to argue against it. The temptation is great to extract a child giving signs of life and which certainly must perish if left undelivered, but many physicians have done so to their regret, not only losing the child but also bereaving the home of the mother. It is not unknown to me that some accomplished accoucheurs have succeeded in saving both mother and child, but nevertheless I condemn it in most emphatic terms, as to my knowledge valuable lives which ought to have been spared have been sacrificed in equally competent hands.

Postpartum hemorrhage frequently follows accidental hemorrhage and placenta previa, caused, no doubt, by uterine overdistention, general anemia and muscular relaxation. In discussing postpartum it is necessary to differentiate between hemorrhage occurring *before* and *after* delivery of the placenta.

The expulsion of the child is followed *normally* by a certain amount of bleeding caused by the separation of the placenta and tearing of the utero-placental vessels. This blood collects between the uterine wall and placenta and its weight aids in the separation and delivery of the placenta. It is different if the placenta is separated only in part; then the uterine contractions are necessarily irregular, the blood-vessels adjacent to the detached portion of the placenta remain open and hemorrhage is the result. The extent of the hemorrhage depends upon the extent of the placental detachment and intensity of uterine contractions.

Hemorrhage with the placenta still in utero is, to my mind, usually ascribable to undue interference during the third stage. Instead of permitting the uterus to recuperate, the organ is massaged and kneaded to keep it constantly contracted. This, of course, disturbs the normal process of placental separation, and the retro-placental blood instead of aiding is squeezed out, the membranes, even portions of the placenta, are torn off and when the afterbirth finally is delivered it is frequently incomplete. I am aware that placental abnormalities may and do cause retention of the placenta; this in my experience is the exception, and with added experience the young accoucheur encounters this much dreaded complication with lessened frequency.

The treatment consists in emptying the uterus without delay, preferably by Credé's method and if not successful the aseptic hand should be used. Pieces of placenta or membranes are to be removed with the finger; the use of the curette is contraindicated.

True *post-partum hemorrhage*, that is *after expulsion* of the placenta, is due to an atonic state of the uterine muscle. Nephritis, uterine fibroids, overdistention and precipitate labor are the most frequent causes.

The symptoms of hemorrhage being so well known, I prefer to devote the remaining minutes to presenting to you the treatment I advocate and practice. It is *not after* but *before* the delivery of the child that I prepare myself to combat hemorrhage. I have within my reach a hypodermic syringe filled with ergotole, an irrigator with uterine tube, hot and cold sterilized water, sterilized gauze 4 inches in width and a few instruments the use of which I shall mention. Before treating the hemorrhage determine its source. If the uterus is large and flabby, filled with dark semi-coagulated blood, which upon compression of the uterus is ejected with a gush, the placental site is its source. Bleeding from a torn cervix is bright red, the uterus is contracted, but, of course, both conditions may exist simultaneously. In atonic hemorrhage the quickest and often successful method is uterine massage. Grasp the uterus as if to express the placenta, not always easy if distended with blood, and empty it of its contents. The tremendous masses of blood forced out will startle the novice. While this is being done ergot is injected and the aorta compressed either by yourself or an assistant. Aortic compression not only diminishes the uterine blood supply, but the consequent anemia is often followed by uterine contraction. Massage not succeeding, hot or cold intrauterine douches are to be used without delay. To these you

may add vinegar, thus combining thermic and chemical stimulation. If this fails to stop the hemorrhage, I waste no more time with this and that but proceed at once to pack the uterus with sterilized gauze. With this method, first advocated by Dührssen of Berlin, every physician practicing obstetrics should be fully acquainted. Seize the cervix with volsellum or bullet forceps, pull it down and out of the vulva and firmly pack the uterus with a long strip of gauze. It is important to begin packing at the fundus, not to leave a cavity above the packing. To retain the tampon in position the cervix and vagina must also be packed. The hemorrhage now being arrested, the task remaining is to combat its results. To compensate the body for the loss of blood, normal salt solution is injected into the rectum and under the skin of chest and thighs. Intravenous infusion is not free from danger and should be reserved for desperate cases, where rapid and prompt action is essential. Raising the foot of the bed, autotransfusion by bandaging the extremities, the injection of stimulants, are all well-known and valuable aids to combat cerebral anemia and urge the flagging heart to continued action. For the latter I especially advocate the hypodermic injection of camphor in a 1:9 solution in oil of sweet almonds. Hot cloths upon the chest and precordium are not only comforting but have a most beneficent effect upon the circulation and respiration. Avoid the administration of food and stimulants per os as the stomach is rarely tolerant and usually empties itself of its contents. The intrauterine packing is removed after twenty-four hours and followed by hot water irrigation. I employ the ice bag after all intrauterine manipulation; it saves the patient much pain and is a good prophylactic against inflammation.

Closing, I wish to say that in the brief time at my disposal I could not hope to present to you a complete picture of hemorrhage in all its phases. I therefore selected its most important phenomena and attempted to sketch these in large but marked outlines.

772 PARK AVENUE.

RELATIVE INDICATIONS FOR CESAREAN SECTION WITH
REPORT OF A CASE.

BY

CHAS. D. LOCKWOOD, M.D.,
Los Angeles, Cal.

(With one illustration.)

THE field of Cesarean section has been greatly broadened since the beginning of the aseptic era in surgery.

The interest of the child must now bear more weight than formerly,—in considering obstetric operations.

Many times, high forceps or version is decided upon, supposedly in the mother's interests, when in reality the interests of both mother and child would be conserved by a timely and skillful Cesarean operation.

Good surgical judgment must prevail here as in all surgical work.

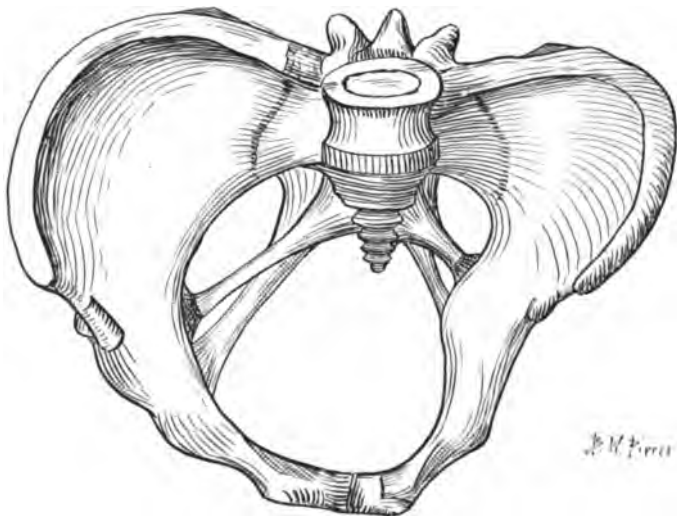
The skill of the surgeon and his assistants, the condition of the patient, and the facilities for aseptic work must be considered. Cesarean section presents few difficulties to the man of average skill in abdominal work, but the selection of suitable cases implies a thorough knowledge of the whole obstetric field.

CASE.—Mrs. P. E., primipara, age 32; consulted me when two months pregnant because of a deformity which she feared might render labor difficult or impossible. At the age of thirteen she was thrown from a horse and fell upon a pile of lumber, striking her left hip. This fall was followed by abscess formation, necrosis of bone, and a probable tubercular infection involving both the hip and knee joints. She was confined to bed for one year and sinuses in the thigh did not heal until she was eighteen years old. Complete ankylosis of the knee and partial ankylosis of the hip joint with about one inch shortening of the leg, resulted. Menstruation was established at the age of twenty and has been normal since.

Physical examination:—Heart and lungs negative; left leg stiff at knee joint; fair amount of motion in hip joint; leg considerably shortened. Healed sinuses in popliteal space and about great trochanter. Pelvic measurements:—Intertrochanteric 29 cm., between the anterior superior spines 23 cm., between the iliac crests 25 cm., external conjugate 18 cm., internal or true conjugate 10 cm.

Patient was examined again at the eighth month. Abdomen was very large, fetal head in left iliac fossa, breech to right of median line, back to left, heart tones 150 per minute. Pelvic measurements were again taken and found practically same as before.

Labor began June 20th. There were a few irregular pains, and then complete subsidence for two days. June 22d, at 10 A.M., regular strong pains began, and continued for two hours when the bag of waters ruptured. Pains ceased except an occasional fugitive one. There was no engagement of the head, fetal heart tones 150, regular and strong. There were no more consecutive,



forceful pains for 24 hours, when I again examined the patient. The mother was becoming nervous and despondent; pulse 120. No engagement of presenting part, fetal heart tones 160, growing weak. Cesarean section was decided upon. Colonic flushing started up powerful uterine contractions and these continued for two hours while preparation was made for operation.

At 6 P.M., under anesthesia. I made another careful examination of the pelvis with the whole hand. Head was freely movable above the inlet; cervix admitted four fingers. The antero posterior diameter was not greatly contracted but the transverse diameter was markedly encroached upon by an incurving of the left side of the bony pelvis (See Fig.). The abdomen having been prepared was now hastily opened by an incision beginning 8 cm. above the umbilicus and extending to 16 cm. below. The

uterus now being exposed, the broad ligaments were grasped by Dr. Claire Murphy and hemorrhage was controlled by digital compression of the uterine arteries. The force of uterine contractions was not in the axis of the inlet and during pains the uterus rotated to the right, forcing the fetal head against the left pelvic brim (See Fig.). The uterus was incised for about 25 cm. longitudinally in its anterior wall. The amniotic sac now bulged through the uterine incision and was snipped open. The gloved hand was now quickly introduced into the uterine cavity, and an arm at first grasped. This was returned and the feet grasped. The child was then delivered, the cord clamped in two places and divided. Dr. George E. Abbott took charge of the baby. The placenta was next grasped through the amniotic sac and peeled off.

The uterine incision was closely by chromicized catgut sutures, the first row 1 cm. apart introduced through all structures down to the endometrium. Superficial catgut sutures were then introduced Lembert fashion. Abdominal wall closed in layers. The entire operation consumed 30 minutes.

Before closing the abdomen the pelvic inlet was carefully examined. The transverse diameter admitted the tips of four fingers. Inward curvature of the left pelvic brim was well marked, right side symmetrical.

Convalescence was rapid and complicated only by stitch-hole abscess at the lower angle of wound.

The baby weighed 10 pounds, and was remarkably well developed in every particular.

I am indebted to Drs. Murphy, Thornton, Abbott and Hogadorn for valuable assistance. Also to the Good Samaritan Hospital for efficient nursing and care.

Too little attention is paid by the average practitioner to pelvic measurements. Undoubtedly many difficult labors with the anxiety attendant thereon, might be avoided by the early recognition of pelvic contraction and deformity. The death of mother or child, or both, is occasionally due to neglect in this respect.

In from four to six per cent. of all obstetric cases, some degree of pelvic contraction exists, and this can be recognized only by systematic pelvimetry in all primiparæ, or by a history of difficult labors.

It must not be assumed that an operation is indicated in every case of contraction, but the more thorough the knowledge possessed of the pelvis, in difficult labors, the greater the state of preparedness to meet emergencies.

It may be assumed that a woman who has previously given birth to healthy, living children at term, has a normal pelvis; but this assumption is never justifiable in the primipara.

It is not necessary that the practitioner should have an accurate knowledge of the whole subject of contracted pelves and pelvimetry, but he should at least be able to estimate the antero-posterior diameter, or true conjugate of the pelvis.

This is determined by introducing two fingers of the left hand into the vagina, with the upper surface of the index finger pressed firmly against the symphysis, and the tip of the middle finger touching the promontory of the sacrum. A mark is then made with the finger nail of the right hand upon the index finger of the left, where it is in contact with the lower edge of the symphysis. This measurement less 1 cm. ($\frac{3}{5}$ in.) for the height of the symphysis, gives the true obstetric conjugate. Normally this is about 11 cm. ($4\frac{1}{2}$ in.). For practical purposes this is the only diameter that need be known, although in rare instances, as in my own case, the true conjugate is deceptive, and is not a safe index to the real deformity.

A very good idea of the transverse diameter of the inlet may be obtained in the manner suggested by Dr. J. B. DeLee, of Chicago. The index and little fingers are used as calipers, while the middle and ring fingers are firmly flexed in the palm of the hand. The tips of the fingers are then placed upon opposite points on the pelvic brim, and the distance between measured by the pelvimeter. This method was not satisfactory in my case, after the eighth month, as the head could not be sufficiently displaced to distinctly feel the pelvic brim.

If the true conjugate is under 10 cm. (4 in.) an obstructed labor may be anticipated, although many of them will terminate spontaneously, and with no greater contraction than this, an expectant treatment is justified. Forceps or version may be resorted to should the pains prove insufficient.

If the true conjugate is 9 cm. ($3\frac{9}{10}$ in.) or slightly under, the case is one for serious consideration and should not be entered upon lightly or in a state of unpreparedness. Forceps or version can ordinarily be depended upon to terminate the labor, but too great confidence can not be placed in these methods if a living child is to be assured. This is especially true if there is a history of previous difficult labors, with dead children.

It is in this class of cases that the relative indication for Cesarean section arises.

Symphyseotomy and the induction of premature labor enter into competition with Cesarean section.

The maternal mortality in symphyseotomy in 160 reported cases has been 2.5 per cent. (Baudelocque's Clinic). The fetal mortality 14.5 per cent. Induced premature labor should not cause more than 1 per cent of maternal deaths, but the fetal mortality is very high—50 per cent. to 90 per cent. It is impossible as yet to estimate the legitimate mortality of Cesarean section. Reynolds reports 88 cases from Leopold's, Everke's and his own clinics with but two deaths. Well selected cases, in skillful hands, under favorable conditions, should not show a mortality of over 5 per cent. It is nevertheless a fact that for all operations the mortality is still very high—25 per cent. to 30 per cent.; but the high death rate can be ascribed only to late operations in infected women, and we must look to the general practitioner for improvement. Upon him devolves the early recognition of obstructed labor, the proper observance of asepsis in the conduct of labor, and the prompt summoning of adequate surgical aid.

Haven and Young (AM. JOUR. OBSTETRICS, Oct., 1903) report two cases where Cesarean section was twice performed on the same patient.

Since 1882, when the Säger operation came into vogue, there have been 167 Cesarean sections performed upon 74 women, 32 of these women were operated upon in the United States with but two deaths. As for the fetal mortality in Cesarean section, it is little more than in normal labors.

To recapitulate, given a woman not in labor or in good condition and uninfected with a true conjugate between $7\frac{1}{2}$ and 9 cm., we are justified in assuming that she will have an obstructive labor, and that premature labor, symphyseotomy, or Cesarean section will be necessary to secure a living child.

Under these conditions a skilled obstetric surgeon would choose symphyseotomy aided by forceps. If he were more skilled in abdominal surgery, he would better choose Cesarean section on the relative indication. If he is not accustomed to surgical work and has few facilities for antiseptic technique, premature labor should be induced.

Cases in which there has been prolonged manipulation with probable infection, are best delivered by craniotomy, although this indication will seldom arise if the obstruction has been recognized early.

ABSCESS OF THE LIVER AND OF THE LUNG AFTER APPENDICITIS.¹

BY

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Washington, D. C.

My excuse for bringing up this much talked of organ, the vermiform appendix, is to report two cases which were interesting to me and which may be instructive as a lesson, that no case of appendicitis, however mild, is to be looked upon as being without danger.

The two cases I have to report developed abscesses,—one multiple of the liver and the other of the lung, both having started as appendicitis. To the general practitioner of medicine, the possibility of his patient with a mild attack of appendicitis, which he cures with an ice bag, dying of an abscess of the liver or developing an abscess of the lung, seems remote.

That infection does travel from the appendix to the liver is admitted by all writers. Laplace² says micro-organisms from a septic thrombus in a vein in the region of the appendix, may be carried to the liver, producing secondary abscesses in that organ.

I. S. Stone³ says: "We know that communication between the appendicular and the portal veins by way of the ileocolic and splenic veins, is direct, and accounts for many of those dangerous infections of the liver and other organs."

Munro⁴ says: "the degree of lymphatic infection is not dependent on the extent of the appendiceal inflammation and may follow many months afterwards." He says of his hepatic cases: "One is impressed with their gravity, both from the difficulty of opening all or most of the abscesses and the hopeless struggle against the general emaciation and sepsis if the case is allowed to go to extremes."

Henry Jackson⁵, in an article on Etiology of Abscess of Liver, reports 17 cases taken from reports of the Boston City Hospital.

¹Read before the Washington Obstetrical and Gynecological Society, March 18, 1904.

²Penn. Med. Journal, Feb., 1902.

³American Medicine, Feb. 27, 1904.

⁴Boston Medical and Surgical Journal, Jan., 1902.

⁵St. Paul Medical Journal, June, 1899.

Accidental, 2; indefinite, 3; amebic, 2; appendicitis, 10, making a total of 58.8 per cent. of abscess of the liver being caused by appendicitis.

In our text-books we are told of abscess of the liver being caused by the ameba, and if our patient has not been in the tropics we are likely to overlook the real condition.

Some of Jackson's cases are as follows: Male, 40; appendicitis not suspected. Died 18 days after being admitted to hospital. Autopsy, abscess of liver, appendicitis. Another case died 52 days after entering the hospital, having run a septic course. The liver had been aspirated, but was negative. Autopsy showed chronic inflammation of the appendix and multiple abscess of liver. A colored girl, æt. 22, diagnosed acute congestion of the liver. Improved and was discharged after two months. Reentered after five months with dull pain in chest and abdomen. Needle in ninth intercostal space; got pus, evidently from liver. After full incision evacuated a great quantity of pus. Death in one and a half hours. Autopsy showed old pleurisy, old appendicitis, with pus in appendix, liver riddled with abscesses. He is not sure of the connection of old appendicitis and abscess of liver, but no other lesions were found.

Male, æt. 38, entered hospital with general abdominal pain, vomiting and griping. Had a chill two days after entrance and again in three days. Patient ran a septic course. Great emaciation and jaundice. Liver enlarged. No operation. Death 28 days after admission. Autopsy, appendix and intestines bound down in right iliac fossa. Large abscess of liver.

It would seem from the length of the time these patients were in the hospital that a diagnosis was difficult and was not made soon enough to save them. The relation of the appendix to the disease was not determined until autopsy. These cases also show the gravity of the condition when allowed to progress so long without operation. If the disease of the appendix had been recognized some time before the patients entered the hospital, and the appendix removed immediately, the patients would have been saved. These deaths should then be placed to the credit of the non-operative treatment of appendicitis.

J. C. Munro¹ reports some cases. One case, after having had several attacks of appendicitis, was operated. She apparently recovered, but after three weeks developed high temperature, chills and vomiting. Diagnosis of abscess was not made for two weeks,

¹Therapeutic Gazette, Jan. 15, 1901.

when tenderness developed over liver. Operation was done, but no pus found. After eight days the wound over liver opened and a great quantity of pus escaped, and again after a week a quantity of foul smelling pus was coughed up. Patient was well two months after operation. Five other cases reported, died. Two were not operated. One appendiceal abscess and diseased appendix found, post-mortem. One was operated for cholecystitis, with a history of appendicitis eight months before. Autopsy showed appendix inflamed, portal phlebitis and hepatic abscesses. In one case the pleura and lung were infected.

Munro,¹ in an article entitled "Lymphatic and Portal Infections Following Appendicitis," reports five cases of abscess of liver following appendicitis and one in which the abscess of the liver was operated at the same time. All six died. All had had recurrent attacks of appendicitis or previous attacks. In all the cases the liver abscesses were multiple. Commenting on a boy of seventeen years who was operated for appendicitis in second attack and in whom the autopsy showed multiple abscess of liver, two ulcers of the cecum, and chronic inflammation of retrocecal lymph glands, he says: "All this might have been avoided if appendectomy had been done after the first attack."

Stuart² reports a case of appendicitis complicated with left-sided abdominal abscess and left pyothorax. Edebohls² records eight cases of appendicitis with lung complications: four empyemas, three perforations of the lung and one pneumonia. Ralph Thompson, Boston City Hospital, reports cases of pylephlebitis and liver abscesses following appendicitis. Kobler in 17,204 autopsies at Vienna, from 1891 to 1900, found 79 cases of liver abscesses, 3 following appendicitis. Hart reports 28 cases of liver abscesses occurring at the Presbyterian Hospital, New York. In 17 the infection was through the portal vein; 3 of them had their origin in an inflammatory process in the appendix. Trowbridge reports a case in which a shawl pin was found in the appendix, resulting in liver abscesses and death. Church reports a third case of a pin in the appendix, pus in portal vein and two liver abscesses, complicating appendicitis. Kiefer, of St. Louis, invites attention to a number of cases of infection of liver in appendicitis, in several of which the infection extended over a period of two years. Mr. W. Gifford Nash, Bedford Co. Hospital, London *Lancet*, cites a case of suppurative appendicitis

¹Boston Medical and Surgical Journal, Jan., 1902.

²Annals of Surgery, 1901.

with secondary liver abscesses, in which he says: "the abscess of the liver occurring in the course of appendicitis is nearly always the result of a septic thrombosis or of a pyelephlebitis."

CASE I.—Miss K., Sept. 14, 1901, æt. 18 years. Healthy until eight years ago, when she had a severe attack of typhoid fever which lasted ten weeks; was treated by homeopath. Patient was never well afterwards and was able to attend school very little. January, 1899, patient had severe constipation and also pain in right of abdomen. The pain was somewhat relieved by keeping the bowels well moved. Her physician told her parents that the trouble was constipation. Her general condition and pains became gradually worse until August, 1899, when she was taken with a sudden and very violent pain in right hypochondrium and epigastrium. Another physician was called who suggested that the case was surgical and called a prominent surgeon, who made a diagnosis of abscess of the liver. She was sent to the hospital and the abdomen was opened to the right of and a little above the umbilicus, a large quantity of pus being evacuated. She remained in the hospital two weeks, when her parents becoming dissatisfied she was taken home. Chills, fever and sweats continuing, another opening was made in the abdomen just above the pubes and another collection of pus evacuated. The surgeon looked for the appendix vermiformis at the first operation, the abscess reaching down to that part, but was unable to find it, and concluded it had sloughed off. A few days after second operation patient developed a slight cough and early one morning coughed up about a pint of foul smelling pus. Patient's condition was then very bad, and physicians told her parents that she would probably not recover. She rallied, however, and gradually grew better. Non-absorbable sutures having been put in the abdomen at the first operation, the wound did not heal. Some of the sutures were fished out during several months following. Eight months after the operation she had so far recovered that she was able to go to the mountains, where she improved greatly during the summer, the cough having never returned, though there was still a fistula in the first scar. In October, 1900, another stitch was recovered.

Patient came under my care September 14, 1901. I found a tall, badly nourished young girl and obtained the previous history. She was then suffering with severe pain in right shoulder. Temperature, 102; pulse, 120; tongue furred and breath foul. A broad scar observed over the right abdomen, reaching from two

inches below the border of the ribs to the umbilicus; a mass the size of a small lemon was felt just under the abdominal wall at McBurney's point. The right lung was dull from the nipple line down. Vocal resonance absent. No bulging between the ribs. The remainder of both lungs was apparently normal. The heart was normal and not displaced.

I made a diagnosis of pus, either in the pleura or in the lung. I asked Dr. Acker to see her with me, and he confirmed the diagnosis. In the meantime I resurrected a silk-worm suture from the abdominal fistula, which promptly closed. The temperature continuing high I proposed operation, but the patient having had so many already and not being well the parents deferred. September 28, the patient coughed up about a pint of foul pus and temperature dropped. The cough continued for a week, bringing up decreasing quantities of pus. October 21, patient again coughed up a quantity of foul pus and again on October 24. The patient's condition was constantly getting worse; the parents gave their consent to operation.

October 30, 1901. With the assistance of Drs. Chadwick and James Stuart a portion of rib was exsected and the pleural cavity exposed. There were a few drachms of serum evacuated. The lung wall was a very dark gray. The finger inserted into the opening found no adhesions, but fluctuation was apparent in the lung. After packing the pleural cavity around the opening with gauze, a small trocar was pushed into the lung. Dirty pus immediately flowed out. The trocar was then removed and the wound in the lung enlarged with a small pair of forceps. About a pint of pus was evacuated. A drainage tube was inserted into the lung and stitched to the thoracic wall. The wound drained well and the temperature became normal. The patient suffered considerable pain constantly, for which, eventually, morphia had to be used hypodermically.

December 15 the wound ceased to drain and the temperature rose to 101. The patient was now greatly emaciated, and being cared for by her parents, who were unable to endure her wailings, she had to be kept almost constantly under morphia. After ten days she again coughed up a small quantity of pus. January 4, tube not draining; temperature 102. Patient emaciated to such an extent that she seemed to have no muscles left. Fingers were clubbed, and she was taking three grains of morphia daily. She was again anesthetized, the chest wound enlarged, and the finger inserted into cavity. Bands of fibrous tissue had closed the

abscess cavity, shutting off several pockets. These were broken down and another tube inserted. The cavity was now much smaller, the liver having ascended to a certain extent and the ribs depressed. From this time on the tube constantly drained, but the patient showed no general improvement until March, 1902, when there was no more discharge from the wound. The pain grew less, the morphia was stopped, and with tonics and forced feeding the patient was able to be out by April 30. Examination of patient March, 1904, show air sounds two inches below nipple on right side, slight sinking in over right lower chest; remainder of lung healthy. Patient in good health. The pus from the wound and also from the expectoration was repeatedly examined for tubercle bacilli, but none were found.

CASE II.—On August 29, 1903, I was called to see Mrs. G. W., æt. 28, married, two children, last two years old. No miscarriages. Father living and healthy.

Mother now has tuberculosis. Patient was well nourished, though she considered herself "delicate."

She had been suffering with an intense abdominal pain for five hours. Temperature, 104. I made a diagnosis of appendicitis and advised operation the next morning. On seeing her early the next day I found the temperature 101 and the pain much less, an ice bag having been used during the night. Some objection was made to the operation. I saw her the same evening; the temperature was then 100 and a small mass was distinct in the region of the appendix. The following morning the temperature was normal, the soreness nearly gone, but the mass could still be felt. The next day, August 31, the temperature was normal, the mass could not be felt, and the patient was comfortable. September 1, I was sent for because the patient had a chill. I found a temperature of 105, and all evidence of appendiceal disease had disappeared. There was no pain or tenderness over any part of the body, and I made a mental diagnosis of malaria, which I thought confirmed, when the chill recurred in two days. The chill recurred in two more days, the temperature dropping to normal the alternate days. She was taking large doses of quinine, but seemed not to be influenced by it. The following day she had a chill, high fever and sweat. During all these days I made repeated examinations of the abdomen, but found nothing.

She entered Sibley Hospital September 9, 1904. Blood examination for malaria was negative. She had a chill at 2 P. M. Temperature afterwards reached 104.8. Quinine by suppository

and inunction was given. At 4 P. M., September 10, she had a severe chill, temperature reaching 103. Urinary analysis showed normal kidneys. September 11, chill at 7.30 A. M., and at 11 A. M. September 12, chill at 2 A. M. and at 3.30 P. M. September 13, had three chills. She had some little tenderness over the region of gall-bladder and a very small mass. Blood examination showed negative Widal, leucocytes above normal.

A diagnosis of abscess of the liver was made, Dr. Chadwick concurring.

Dr. Perry, of Baltimore, saw patient and made the same diagnosis, independently.

The next day, September 14, temperature 106.2, pulse 136. She was anesthetized, the abdomen opened over the liver, and a dark congested liver exposed with a small round light spot on the under surface of the right lobe. This was soft, and supposing it to be an abscess, a trocar was pushed in. Dirty, dark-colored blood, about three drachms, flowed out. The liver was then incised over the same spot and a small cavity, about as large as a walnut, was found, from which the fluid had come. Nothing further being found the liver wound was packed about with gauze and a small drainage tube inserted.

The temperature dropped after the operation, but on September 16, two days after, again reached 106.2. The chills continued at about the same intervals. Patient died September 27, thirteen days after operation.

From the time of the attack of appendicitis I examined the abdomen carefully every day for some signs of pus. There were absolutely no signs or symptoms except the chills, fever and sweats until September 14, and then the tenderness was very slight, and one thought he might be drawing on his imagination, the mass in the region of the gall-bladder was so small. I thought from the first that the infection was in the liver, but in the absence of any evidence to that effect did not feel justified in making an exploration. Unfortunately, no culture was made from the pus, but the infection was probably caused by the streptococcus.

There is no doubt in my mind if she had been operated upon for appendicitis within the first forty-eight hours her life would have been saved.

The history of all these extended infections from the appendix shows that they occur in patients who have been treated expect-

antly and in those who are operated upon after one or more attacks, when the infection has already taken place in the liver.

It is probable that the lung was infected, in the first case, through the pleura, the lung having been at some time adherent to the parietal pleura just above the diaphragm. The long convalescence after the drainage tube was put into the lung was due to the fact that we were dealing with a cavity formed in part by the ribs, and only partially encroached upon by the liver below, the remaining space having to be filled in by connective tissue.

The lesson we learn is that no case of appendicitis, however mild, is to be looked upon lightly, and even if all symptoms are gone, after several years we may get multiple abscess of the liver, which usually means the death of the patient.

In no case of appendicitis can we give a positive prognosis, especially if there have been chills and sweats. If the patient apparently recovers after appendicitis, and after a length of time chills and fever occur, suspect liver infection.

And finally, advise operation in every case, telling the family what may occur, shifting the responsibility to them.

1312 15TH STREET.

PARADOXICAL MEASLES.¹

BY

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THE case of measles here reported was paradoxical in its way of making itself manifest. The general routine of measles phenomena was reversed. No doubt others have seen similar or like cases; but they have failed to report them, in all probability, because the routine method adopted in interpreting each series of symptoms as unrelated and due to some special cause, and making the exanthem the specific mark of the disease, led them to infer an accidental and unimportant series of pathological events barren of any related consequence, and therefore not important as a matter worth recording. The exanthem of all the eruptive diseases is in reality only incidental, and important only as a distinguishing and specific diagnostic sign; but the exanthem and enan-

¹Read at the meeting of the City (Charity) Hospital Alumni Society, April 13, 1904.

them are not the disease processes, and are of no vital importance therapeutically, bacteriologically, or pathologically. The case is reported because it may serve as "an aid to reflection" when it becomes necessary to adjust irregular clinical phenomena with the results of experimental research.

Elsie W., when first seen on April 5, 1904, was sick with diarrhea and bronchitis, she was feverish, and did not care to take her bottle. She had always been a bottle baby; and, though slightly affected with rickets, she had been sick very little; and nine months previously had been treated for summer diarrhea, from which she rapidly recovered. On mouth and throat inspection I found the tonsils and fauces reddened uniformly. The child also at this time had a slight influenza; but no tearing of the eyes.

April 6.—The diarrhea was less, so was the "cold in the head," the throat was less hyperemic but there was no improvement in the bronchitis. Treatment continued:

R

Paregoric.....	3i
Aspirin	3ss
Bismuth Subnitrate	3ii
Ess. Caroid	3ii
Aniseed water	3xvii

M. Sig. One teaspoonful every two hours before nursing.

Diet was milk and raw meat juice.

April 7.—Child worse. Respiration rapid; pulse over 170. Pneumonia at the right apex; and bronchitis as diffuse as before over the right lung; but seemingly less over the left lung. Diarrhea less, but not cured, the above R was alternated with:

R

Paregoric.....	3i
Tr. Strophanthus	3ss
Spir. Nitrous Ether.....	3iii
Syr. Yerba Santa.....	3vi
Aniseed water	3x

M. S. One teaspoonful every four hours.

April 8.—A typical picture of measles; the eruption on the face, on the neck, and all over the body. Appearances in the mouth are now a mottled redness, as seen in measles. The eyes suffused, and the conjunctivæ hyperemic. Bronchitis no worse. The pneumonic area has spread.

April 9, A.M.—The eruption has increased, but is of a rather

purplish hue. Finger tips are cyanotic. The last B given every two hours, and gtt. xv of whiskey given in one-half teaspoonful of meat-juice every two hours besides.

April 9, P.M.—Child seemingly better, cyanosis has disappeared, and the eruption has assumed a more healthy color.

April 10.—The anniversary of the child's birth, one year old. Died about half-past seven o'clock, convulsions ending the series of disease phenomena.

REMARKS.—The sequence of disease phenomena in this case, the reverse of what is usually seen, is the point of interest. Cases of this kind open up an ample field of speculation in the domain of etiological possibilities and pathological irregularities.

Upon closely questioning the mother, it was found that the child had been feeling out of sorts since March 31, 1904; she had coughed, and sneezed, felt languid at times, was irregularly loose in the bowels, and was irritable. These symptoms would vary and now and again give way to moments of playfulness and good cheer. On April 6, the day when the child was first seen by me, she was quite sick.

1. The Diarrhea.—In this case, the child being a bottle baby, it might be assumed that the diarrhea was due to ordinary dietary indiscretion. But up to the time of its last illness the child had not been sick since July, 1903; and the mother was certain that nothing had been done to account for the diarrhea. The intestinal evacuations were slimy, undigested milk curds, and bilious. There was only occasional vomiting following attacks of coughing. Not an organ or a tissue in the body but that it is subject to attack. As an organ, says Professor Dr. Theodor v. Jurgensen, the stomach scarcely ever suffers, and this is the unanimous opinion of all observers. The diarrhea was checked within 48 hours; but the vomiting continued from time to time after fits of coughing. Jurgensen also tells us that diarrhea may precede the initial enanthema and be etiologically related to the measles toxin. Usually diarrheas due to measles occur at the height of the exanthematic stage.

2. Bronchitis and Bronchopneumonia.—A child may have bronchitis and this be followed by pneumonia, and the measles infection have nothing to do with the bronchitis and pneumonia; but in this case the eruption followed the day after the discovery of the pneumonic process. If the child had not been examined every day the pneumonia would not have been discovered at the right apex on day it was found by auscultation. The day

after the discovery of the pneumonia, the measles eruption came out in normal color; but the next day it turned a purplish color and then became indistinct almost to fading away. This was no doubt due to the progressive depression of vitality caused by diminished blood oxygenation and degeneration generally. Poultices applied to the thorax on the 9th of April in connection with increased cardiac and vascular and neural stimulation revived the sinking vitality, for a time, so as to bring back the eruption and relieve the respiratory distress. On the morning of the 10th of April the child died in convulsions. The eruption previous to the onset of the convulsions had again become paler.

3. Convulsions.—This child was somewhat, not markedly, rickety; and being thus, as is often the case, predisposed to respond abnormally to reflex and other irritations, it was not taken with convulsions until its capital of vitality was all but exhausted.

Epicrisis.—A good many people, even to-day, believe very much as Rousseau did more than one hundred years ago, that children's diseases are essentially simpler than those of adults, and less complicated; because the life of childhood is simpler than that of adults. Bacteriology has knocked all the sense once placed in the social doctrine of Rousseau's simpler life out of existence. But long before toxins and antitoxins were dreamed of as pathological and therapeutic agents, in the sense that they are spoken of to-day, clinical practitioners had met with disease evidence enough to upset the hopes based on the advantages claimed for the simpler life. Better methods of diagnosis, and a more careful application of these methods by the clinician, have long since made it clear that the diseases which afflict children are every bit as complicated as those found in adults. The child's case just narrated is one in point. One can speculate on the conflict of a dozen or so of different bacteria that battled with the antitoxins, etc., in this child's body; and one could keep pace with the pathological and dynamical changes that were progressing; but the art of healing was at a loss to do more than ameliorate the gross evidences of a rapidly disintegrating embodiment of infantile "Bionergies." This is a paradoxical case of measles; and rare in so far as all the phenomena which are common enough in ordinary cases occurred in a reversed order.

359 WEST THIRTY-FOURTH STREET.

LIGAMENTS OF THE UTERUS AND THEIR FUNCTIONS.*

BY

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(With two illustrations.)

IN looking upon one of the great buildings which adorns our city, rearing cloudward its dizzy walls, standing firm as the eternal rocks, regardless of passing storms, and analyzing the forces by which this stability is maintained it would never occur to one that it was due to any single factor, as the stone, the mortar, the framework or any one element of strength, but rather to the happy union of interdependent elements, walls, steel framework, partitions, floors and roof all cemented and riveted together into one firm and rigid structure. So with the maintenance of the uterus in a normal position, the areolar connective tissue, the ligaments, the pelvic diaphragm composed of fascia and muscle, the perineum, intra-abdominal pressure and gravity all unite to maintain the natural position.

Again, in the building, some one element, as the steel framework, possesses more of the strength and power for stability than other parts. We may find in the supporting elements of the uterus the analogy in its ligaments, for the chief sustaining power lies in them, but here the analogy ceases, for while the building depends for its position upon the resistance and rigidity of its elements the organ under discussion depends largely upon the resilience, elasticity and retractile power of its supports for the maintenance of its position.

Before considering the ligaments of the uterus let us consider briefly connective tissue in general.

All¹ connective tissue substances are formed directly from the mesoblastic tract by the differentiation and specialization of the intercellular substance, through the agency of mesoblastic cells. During embryonal growth these tissues are represented by a semi-gelatinous plastic mass of which the jelly of Wharton is an example. Gradually in the course of development this is replaced by the various forms of connective tissue.

*Read before the Woman's Hospital Society, March 22, 1904.

Three forms have long been described, viz. : areolar, fibrous and elastic tissue. Others, however, belong to the same group as a study of their structure and development in the mesoblast shows. Among these may be included adipose, retiform and lymphoid tissue, cartilage, bone and the elements of the blood and lymph. We are concerned in this study chiefly with the areolar and fibrous tissues. A brief description of areolar² tissue will serve to make the subject plainer.

If we make an incision into the skin and attempt to dissect it from the subjacent parts we observe that it is bound to them by a soft filamentous elastic tenacious tissue of a white and filmy appearance. This is typical areolar tissue. It is extensively distributed throughout the body, binding the skin, mucous membranes and serous membranes to their subjacent parts; connecting muscles together, surrounding the attaching blood vessels, nerves and large lymph vessels, proving an ideal medium for transmission to their ultimate destinations. It also binds together the component parts of glands and muscles, in short penetrating between and binding together parts of the body more extensively than any other form of connective tissue. It is found freely distributed in the pelvis between the folds of peritoneum which take part in the formation of its ligaments and accompanying the blood vessels and nerves so freely distributed to these parts. It varies greatly in its density, all the way from the loose areolar tissue to the dense fibrous structure of fascia; in parts requiring free movements of one surface attached to another as in the skin, being soft and elastic, and, where firm and resistant connection is required, being more dense and firm as in the ligament of Treitz, binding the duodenum to the posterior abdominal wall.

The elements of which it is composed are:

(1) White fibers, which are arranged in wavy parallel bands not inosculating but sometimes interlacing. Upon being put upon the stretch these wave-like corrugations become straightened out to return again when tension is released.

(2) Yellow elastic fibers composed of a yellow homogeneous and very elastic substance, running in straight or broadly curved lines, inosculating freely and forming wide meshes.

(3) Ordinary branching nucleated connective tissue cells undergoing many modifications of form according to the density of the tissue.

(4) Highly vacuolated plasma cells of Waldeyer, irregular and of uncertain form.

(5) Granular cells, spherical in form.

(6) Lymph or wandering cells.

Fibrous tissue which is found in ligaments and fascia differs from the areolar in the excess of the white fibrous element, elastic tissue in the preponderance of yellow elastic fibers.

In the female pelvis there occurs a distribution of plain muscular fibers which imparts a peculiar property to the connective tissue so freely distributed here.³ It is a well established fact that non-striated muscular fibers are found in the broad⁴ ligaments, the utero-sacral and ovarian ligaments. The round ligaments are composed almost entirely of it.⁵ In regard to the distribution of the pelvic connective tissue, Von Rosthorn states that the cervix is its center from which processes of more or less condensed connective tissue radiate in different directions in the midst of the more lax connective tissue. It extends toward the sides of the pelvis, through the basal portion of the broad ligaments, to the posterior portion through the utero-sacral ligaments and to the anterior through the vesico-vaginal septum. Waldeyer⁶ states that the relations of the pelvic visceral connective tissue in women are very important, especially that portion which extends from the posterior inferior wall of the bladder and which is very strongly developed. It runs along the base of the broad ligaments and unites the paracystin, paraproctin and especially the parametrium and paracolpin, with the lateral walls of the pelvis. In this general consideration of the character and location of the pelvic connective tissue I shall include that portion of the pelvic fascia which extends above the posterior part of the anterior vaginal wall and which is a part of the recto-vesical fascia. It forms a sling-like process beneath the bladder, being an offshoot from the pelvic fascia at the sides and attached to the cervix behind and the pubes in front. This is germane to my subject, since this fascia, together with the utero-sacral ligaments completes the antero-posterior ligamentous chain which forms a most important element in sustaining the uterus.^{7 8 9} The presence of the above described fascia is positively denied by several authorities and most imperfectly described by others, but its existence is asserted by some equally good.

I have demonstrated a well-marked fascia lying between the vagina and bladder in an operation for cystocele. In this case it was easily separated from vagina and bladder, having both above

and below it a layer of areolar tissue. It was very thin in the center but toward the sides became a well-marked firm structure. The edges were brought together with chromic cat-gut. The operation was not original with me and I mention it only as establishing, without a doubt in my mind, the existence of this fascia. We have now taken up in a general way the structure of the uterine ligaments and it remains to describe in a minute way their anatomy and topography. The uterine ligaments are two broad, two utero-sacral and two round ligaments and the utero-vesical ligament or subvesical fascia.

The¹⁰ broad ligaments extend outward from each side of the uterus to the lateral walls of the pelvis being attached along a surface of the pelvis which is situated between the great sacro-sciatic notch and the margin of the obturator foramen and as far down as the level of the spine of the ischium.

Each ligament consists in a fold of peritoneum between the layers of which at the upper border lies the Fallopian tube and the ovarian vessels and nerves, large venous plexuses and loose areolar connective tissue. In front a short distance below the upper margin, extending outward beneath the anterior layer, lies the round ligament. Toward the base the connective tissue is more dense in character and contains numerous plain muscular fibers. Here pass the uterine vessels and nerves accompanied by considerable condensed areolar tissue. About midway between the uterus and the side of the pelvis and a short distance beneath the upper border, attached to the posterior layer lies the ovary. It is directly connected with the uterus by the ovarian ligament. This ligament arises from the upper, outer and posterior part of the uterus and is composed largely of plain muscular fiber.

The functions of the broad ligaments are to give support for the ovaries and tubes, to act as a medium of support and transmission for the blood vessels, nerves and lymphatics, to prevent lateral displacement of the uterus and to act as one of the most important agents in sustaining it in its normal plane in the pelvis.

The more dense tissue in the base of the ligament and the presence of muscular fiber there tends to fix and sustain the cervix in its position while the thin and more lax areolar tissue in its upper part facilitates a backward or forward movement by which the organ may accommodate itself easily to the full or empty bladder or rectum.

The round ligaments of plain muscle are continued from the upper, outer and anterior aspect of the uterus beneath the peri-

toneum of the anterior layer of the broad ligaments. They pass outward and forward to the internal abdominal ring in a gentle curve the concavity of which lies inward and forward. They pass through the inguinal canal along with branches of the ilio-inguinal and genito-crural nerves. They are attached at the exit to the fascia of the external ring, the deep layer of the superficial fascia and finally spread out and are lost in the fascia of the pubes. They receive their blood supply chiefly from a branch of the ovarian artery which passes down through their center. They vary greatly in size but are usually about $\frac{1}{3}$ of an inch in diameter at their origin, gradually tapering toward their extremities. It is often the case that the part of the ligament extending from the uterus to the external ring is about the usual size, but upon passing the ring its caliber suddenly diminishes until it is a mere filament of most friable character.

The function of the round ligaments is chiefly that of guys to prevent backward displacement of the uterus and to guide it forward to the normal position after childbirth. Being an offshoot from the uterus its fibers during gestation undergo great hypertrophy and it is amply able to perform the latter function. It certainly under ordinary circumstances contributes nothing to the maintenance of the uterus in its normal plane. The utero-sacral ligaments are enclosed between folds of the peritoneum which extend backward and slightly outward from the cervix at a point corresponding with the internal os, passing on either side of the rectum and being attached to the pelvic fascia and the periosteum of the second and third sacral vertebræ.

They consist of areolar and fibrous tissue with plain muscular fibers interspersed. Joessel and Waldeyer refer to them as the recto-uterine muscles. Their function is, together with the utero-vesical fascia, to form a chain of musculo-ligamentous tissue from the pubes to the 2d and 3d sacral vertebræ to maintain the cervix at its proper level and position in the pelvis.

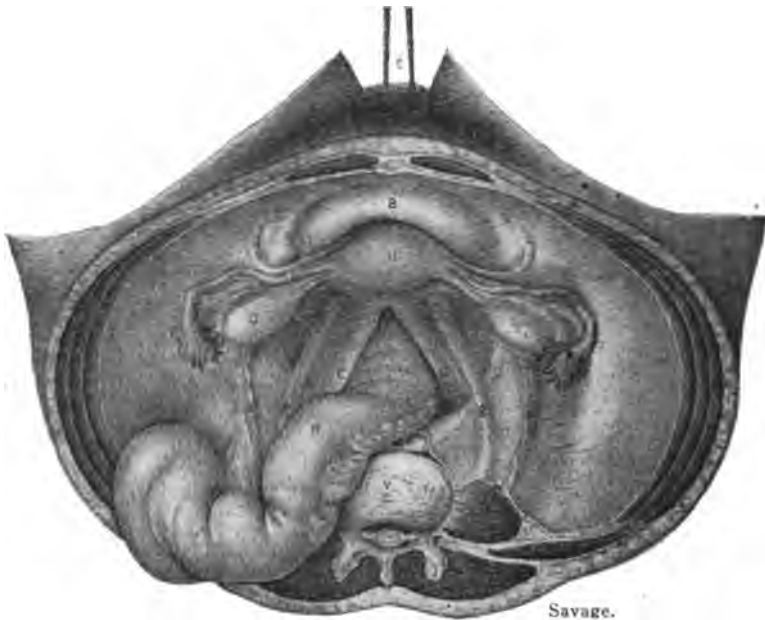
In addition to the separate functions already described there is one of the greatest importance, exercised during labor. When the pains set in the round ligaments tend to draw the fundus forward so that the expressive forces shall act more in the pelvic axis, and the utero-sacral, utero-pubic and basis of the broad ligaments offer a counter force on the periphery of the cervix to that of the expulsive forces from above and gravity, thus tending to dilate the cervix and aid in the expulsion of the fetus.

Finally, I will quote to you Savage's classic experiment and present a copy of the cut accompanying it:

"Effect of drawing upon the cervix until the parts were put firmly upon the stretch to the point of threatened rupture of the tissues, traction being made in the line of descent taken by the uterus in prolapse."

(1) "The bladder was depressed and compressed toward the pubes, the uterus descending about an inch and a half."

Fig. 1.



Showing section across the pelvis. Traction being made on cervix showing utero-sacral ligaments on the stretch.

(2) "The utero-sacral ligaments lost their natural curve around the fore part of the rectum and became straightened out from being forcibly stretched between their points of attachment."

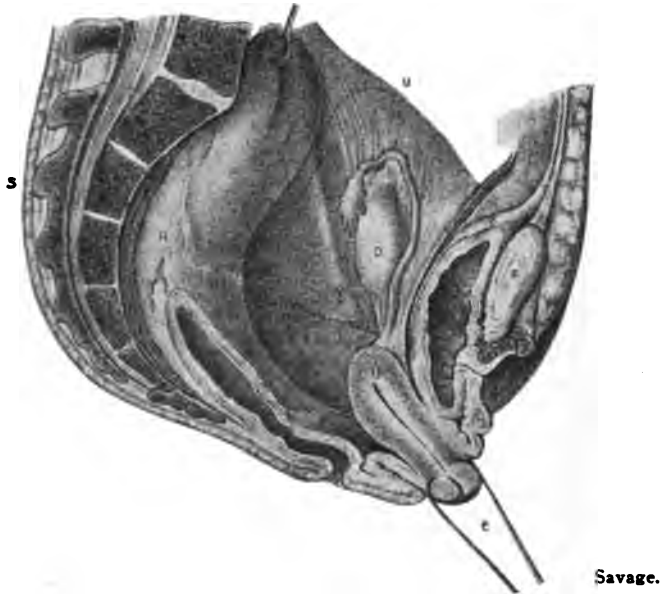
(3) "The round ligaments curved around but were not put upon the stretch, the ureters and spermatic vessels became somewhat more prominent under the peritoneum."

(4) "No sign of strain whatever on broad or round ligaments."

"The utero-sacral ligaments were then divided transversely when the uterus yielded rather suddenly about an inch. Before examining the new obstacle to the descent of the uterus the pelvis was divided perpendicularly from before backward."

(1) "The ovary, tube and round ligament were seen to be in their natural relation to the broad ligament, the broad ligament itself being firmly on the stretch from the side of the pelvis. The bladder was drawn down with the uterus, the rectum not disturbed, the anterior layer of its subperitoneal cellular sheath retained a much weaker hold of the vagina than existed in the case of the bladder, vagina and uterus. The uterus was half out of the vagina, being held in place only by the broad ligament

Fig. 2.



Antero-posterior section of pelvis showing effect of traction after division of utero-sacral ligaments.

which, when divided, removed the last obstruction to complete prolapse."

"After the uterus came down a further inch as a result of dividing the utero-sacral ligaments some further obstruction to its descent beside that of the broad ligaments was observed and found to be the sub-peritoneal connective tissue, particularly where it surrounds and accompanies the uterine blood vessels.

"This tissue is here strengthened by additional trabecular filaments so disposed as to protect the blood vessels from sudden or unusual strain.

"Complete prolapsus was effected only after the yielding of

the pelvic reflections of the broad ligaments. This occurred from behind forward, the round ligaments being the last to be put upon the stretch.

"Permanent cure of uterine prolapse depends chiefly upon the elastic qualities of subperitoneal pelvic tissue, the latter always retains its relations with the displaced organs as well as with the pelvic vessels. Owing to the slow progress of prolapse the connective tissue yields to an enormous extent; but the fibro-elastic elements of its structure will very often enable it to return eventually to its normal condition if relieved from the weight of its prolapse."

The above quoted experiment is most valuable but I would call attention to the different action of tissues composing ligaments and those composed chiefly of muscle in the cadaver when subjected to strain.

71 W. 49TH STREET.

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THE PERINEUM AND PERINEAL BODY.¹

BY

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THE term perineum (*περι ναιω*) has been variously applied by anatomists, obstetricians and gynecologists; firstly, in its general meaning, to the soft parts connected with the pelvic outlet (Gray); secondly, to the anterior or genito-urinary segment only of these parts (Cruveilhier); thirdly, to the tissues separating the vulvo-vaginal and the ano-rectal passages (Dunglison); fourthly, to "the skin between the fundament and the scrotum or vulva" (Hippocrates).

The first definition is the one used by Morris and Quain but qualified in the description by omitting the walls of the canals emerging and their openings. The second seems too artificial as confining the description to the fascia of the triangular ligament; the third is better described by the title "perineal body," which is a term of long usage; and the fourth does not need the title.

It seems, therefore, better to confine the name to the area usually described under the first title, omitting the anal, vulvar and urethral orifices as well as the enclosing walls of the canals to which the orifices are openings, the skin of the buttocks and the fat of the ischio-rectal fossæ. The perineum would then consist of the skin bounded by the mons veneris in front, coccyx behind and gluteal folds and adductor folds laterally, the fascia extending from os pubis in front, coccyx behind and tubera ischii laterally together with the muscles, arteries, veins, lymphatics, and nerves enclosed within those fascial planes.

It would be well if we had some word to describe the tissues between the ano-rectal wall and the coccyx. Matthews Duncan, I think, was the first to point out certain variations in position of the vulvar orifice that brought it directly under the symphysis in one instance, directly behind the symphysis in the majority of instances, and far posterior in a considerable portion of cases. In the last group the perineum would be short, the perineal body small; in the two former much larger. With this variation not stated in the anatomies, it seems to me the anatomical description

¹Read before Woman's Hospital Society, March 22 and April 26, 1904.

lays stress on wholly unimportant elements and neglects both embryological and comparative anatomical details, both of enough importance to account not only for formation of the anus, but for its variation and absence, as well as its function.

In the development of the uro-genital sinus and its common cloaca, at first the termination of the primitive intestine as well as the Wolffian and Müllerian ducts, a condition persisting in the Monotreme, the lowest form of mammals, we have no support to the uterus caudad at all unless the stalk of the allantois prevents its caudal growth. An invagination of ectoderm forms the anal depression or proctodeum, which meets the endoderm at a point cephalad of its termination and the membrane of junction perforates.

While this junction is going on, a partition, septum uro-rectale, develops symmetrically on each side the internal perineal folds. Two portions of the original cloacal membrane then perforate separately, the uro-genital before the anal. The internal perineal folds are supplemented by the formation of similar external folds ridges of mesoderm tissue which surround the anal orifice. The internal perineal folds or endoderm, the external or mesoderm. It is with the latter we have to deal in the formation of the perineum. Atresia, of course, is due to non-perforation of the cloacal membrane most commonly, but sometimes to non-development of the endoderm. But various congenital defects are due to non-fusion of the perineal folds.

The fuller significance of these facts appears when we see the muscles and fascia of this region in lower animals, when the uterus is only maintained in position by the broad ligaments, simple folds of peritoneum containing fascia, blood-vessels, nerves and lymphatics. Paulet and Thompson, in their comparative anatomies of the perineum, show that the recto-vaginal openings are enclosed by a superficial muscular plane, panniculus carnosus, of which the fibres run in a circular direction to form a sphincter cloacæ. Cephalad to this circular muscle are the great ischio-caudal and pubo-caudal muscles, to move the tail. The ischio-caudal remains in man as the coccygeus muscle on a plane inferior or caudal to the levator ani, or ischio-rectal muscle that everts the rectal mucous membrane of ruminants. Whether the pubo-caudal remains as a part of the levator ani in man remains in doubt.

As the remains of the sphincter cloacæ and its muscular expansions we have the transversus perinei, superficial rectal sphincter and possible sphincter vaginæ. The compressor urethræ lies

on a plane anterior or cephalad to these superficial muscles. The levator ani is much weaker in man than even in the anthropoid apes, and therefore offers less resistance in childbirth.

Neall has shown that the abdominal walls are made up of myotomes migrating forward from the ventro-lateral musculature, each myotome with its intrinsic nerve. The external perineal folds are no exception and the internal pudic nerve supplies these superficial perineal muscles, while the levator ani and coccygeus receive their supply from the sacral and coccygeal. The anterior fibers of the levator ani often receive a different supply from the pudic, and may be remains of the panniculus sheet as thus indicated. Nerves, however, rarely do migrate, and this conclusion needs study.

Studdiford has recently pointed out anew that the median raphe of the perineum is made up largely of unstriated muscle fiber with sympathetic innervation. Henle said the same, and so does Quain. But this element seems to be ignored by gynecologists and its importance overlooked, as much of the resiliency of the perineum depends upon it.

This roughly is the anatomy of the perineum along the points which I think are least understood. Their bearing, however, can be interpreted in many different ways. That the skin offers no obstacle to hernial protrusion is definitely proven in other parts of the body. That the near approach of the thighs prevents the emergence of the uterus is not sufficiently remembered. We always separate the thighs to draw down a uterus. The difficulty of drawing down the uterus of a cadaver is not generally appreciated. In other words the resiliency of live tissue must be kept in mind, as well as atmospheric pressure.

Although we all see badly lacerated perineae and no uterine prolapse even with retrodisplacement—(I have seen two such cases)—although we have all seen complete prolapse in virgins with apparently strong muscles, still it seems to me that the diaphragm made by the levator ani and not the perineal body is enough of a spring, reinforced by atmospheric pressure and the weak utero-sacral and pubo-uterine ligaments, to maintain the uterus in a position against the symphysis below and prevent its displacement.

THE FUNCTIONS OF THE FEMALE PERINEUM.

The functions of the pelvic floor are so intimately blended with those of its constituent elements that it is difficult to differentiate

any functions pertaining to the entity known as the perineum. With this qualification the functions may be divided into those common to the two sexes and those concerning the female.

The skin of the perineum is particularly sensitive to pain and heat and cold, because of its large nerve supply and its protected situation. Probably for the same reasons the reflexes are peculiarly prompt. The skin affords support, protection and elasticity to an area subject to variations in size during the acts of defecation, of coitus and parturition, breathing, coughing, sneezing and stretching of the thighs.

The lymphatics drain the skin and afford anastomosis between the lymphatics of the vulva, vagina, labia and anus and rectum. These lymphatics drain to the inguinal, iliac and sacral lymph nodes or glands. Injury to the perineal body, therefore, would block these channels in part and thus cause lymphectasia of labia or of the region of the vulva, but might be of benefit in carcinoma or tuberculosis of anus or vulva.

The arteries anastomose so completely that the whole area injects readily, while the venous anastomosis is still more complete, rendering the tissue almost erectile and decidedly distensible. If one introduces a needle with injection mass into the glans penis or the bulbs of the vestibule not only will the mass pass to both sides, but it will fill the veins over the pubes, in front of the bladder, the pudics, internal and two superficial, and even the inferior hemorrhoidals.

In breathing, coughing, etc., the pelvic diaphragm acts as an elastic recoil to the downward thrust of the true diaphragm, its recoil, however, diminished by the much greater recoil made by the anterior abdominal wall. This recoil is dependent upon the *normal* tone of the perineal muscles, the levator ani, coccygeus, transversus perinei, sphincter ani, sphincter vaginae and unstriated muscle fiber present in the central tendon.

The least elastic elements are, of course, the fascias, which become relaxed or rather stretched when the muscular tone is lost. In old men with deficient muscular tone the perineum pouts downward as it does in old nulliparæ. Thus the muscular planes support the entire abdominal and thoracic contents when oft repeated efforts increase the pressure exerted by those contents downward. It must be understood, however, that if the perineum, levator ani muscles, and fascia were dissected away on the cadaver still the abdominal contents would be held in place by the pressure of the atmosphere and negative pressure in the thorax, and their own

weak ligaments, but pressure upon the abdominal wall would cause them temporarily to pout downward into the dissected area. The perineum thus in secondary fashion supports the uterus, bladder and rectum.

In defecation the irritation of the fecal contents in the rectum cause a contraction of the diaphragm, closure of the glottis, contraction of the abdominal walls, increase of peristalsis, fixation of the central tendon of the perineum by the levatores ani and transversi perinei of both sides acting together. This straightens the last portion of the rectum and perhaps the first two portions, and the relaxation of the two sphincters of the anus results in the emptying of the rectal lumen, the final mass being extruded through the eversion of the rectal mucosa by a final greater contraction of the levators and transversi. The beginning and end of the muscular act of defecation are therefore dependent upon the maintenance of the normal muscular tone of the perineum, together with intact muscular fibers in the sphincters ani and levatores ani. An excess of this muscular tone may cause constipation, either muscular or more commonly neurotic, and it causes constriction of protruding hemorrhoids with consequent pain and swelling.

A function of the perineum in retaining the semen in the vagina, after coitus, long enough to permit of impregnation may be of importance in individual cases.

The function of closing the perineal orifice may become of pathological significance in dyspareunia, whether due to the small sphincter vaginae or more commonly to the anterior fibers of the levator ani when the hymen itself or its remains is not hypersensitive.

During pregnancy the perineum softens and enlarges together with the other generative organs. This enlargement may be as much as 5 to 8 cm. increase of the skin distance from coccyx to symphysis (Hirsch). There is an actual increase of muscular elements, as well striped as unstriped, and an increase in the vascular and lymphatic channels. This increase of muscular elements, of course, takes place in the vaginal wall also and is a factor in the enlargement of the perineum, as is the congestion of the rectal mucous membrane which results often in hemorrhoids at this time. The perineum therefore pouts downward, 1 to 2 cm. below the line of its course in the non-pregnant state. The change in the lumbar curve, however, is in part responsible for this.

During parturition the resistance of the pelvic outlet, including perineum and the hypertrophied vaginal walls, causes the pressure which flexes the child's head and maintains that flexion until the outlet is passed. It also is responsible for what is called rotation, that screw-like movement of the descending head which permits the emergence of the occiput under the symphysis. If the perineal body is absent this rotation is apt not to take place, albeit the spines of the ischia may offer enough resistance to accomplish it. The influence of the spines seems to me much exaggerated. The recoil of the child's head at the remission of the uterine contraction is due also to the recoil of the stretched perineum and levator ani muscles, thus permitting a return of the blood supply to the vaginal rectal outlet as well as the stretching of the connective tissue fibers within the perineum, as those fibers are usually the first to give way in perineal lacerations; this function of the perineum in its own preservation cannot be overestimated, although the maintenance of flexion by the same powers, until the occiput is delivered is, of course, of like importance.

The function of the intact perineum in promoting involution after confinement has not been dwelt upon sufficiently, it seems to me, either in preventing infection or in the vascular anastomosis which carries away the degenerating muscular elements.

130 EAST 36TH STREET.

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ATMOSPHERIC PRESSURE AS A SUPPORT TO THE UTERUS.¹

BY

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AFTER a perusal of the literature on the subject of atmospheric pressure as a support to the uterus, I find that most of the writers consider atmospheric pressure in its various forms as the chief support.

For as Dudley says, "The idea that the uterus is supported by the vaginal wall, or by the perineum, or by the uterine ligaments is obsolete. They are important parts of the pelvic floor and as such contribute their share."

The term atmospheric pressure is too indefinite to describe the force tending to hold the uterus in place, so that one of the forms of this pressure, as intra-abdominal pressure, the density or specific gravity of the structures, etc., will be more appropriate. There are no definite facts set forth on this subject so far as I am able to discover, and as each author has a different view I shall quote in preference to using my own words.

We must remember, as Penrose says, "When the woman is erect the insertion and origin of the various uterine ligaments lie in the same horizontal plane. The insertion of no ligament is higher than its origin in the uterus, therefore these ligaments do not act as suspensory ligaments when the uterus is in its normal position."

As for the relation of the surrounding structures to the uterus, Galabin of Cambridge notes that: "It is most correct to regard the floor of the abdominal cavity as formed by the plane of cellular tissue, nearly parallel to the pelvic brim, including the anterior vaginal wall and the utero-sacral ligaments of which the supra-vaginal cervix uteri is the center," and he continues, "This most directly receives the effect of the intra-abdominal pressure. The diaphragm at a lower level made up of strong muscular tissue of which the levator ani is the chief, and which is commonly described as the pelvic floor, does not directly receive the impact of intra-abdominal pressure, but has an important function in supporting the upper diaphragm or abdominal floor or as it is sometimes called the pelvic 'roof.'"

¹Read before the Woman's Hospital Society, March 22, 1904.

Now Dudley states that the pelvic floor is the chief support of the uterus; for as Penrose says "The uterus floats in a closed vessel at a level which is consistent with its own specific gravity." With regard to the intra-abdominal pressure Dr. Skene thought "There is very little abdominal pressure." Montgomery of Philadelphia believes "so long as the intra-abdominal pressure continues upon the posterior surface of the uterus it is held forward against the bladder." For as Hirst says: "In the erect position the bladder affords the uterus considerable support in a moderately distended condition and the intra-abdominal pressure with the weight of the abdominal contents upon the posterior uterine wall is a most important factor in maintaining a normal position of the uterus."

The vitality and tonicity of the structures composing the pelvis must be considered. As Pozzi remarks, "The tonicity of the pelvic floor, of which the only weak point is occluded by the normal contraction of the vagina, prevents the abdominal contents from acting in the direction of their weight; the pressure is distributed over the whole surface and the uterus floats as if it were suspended in the midst of the organs of the lower pelvis which act as a cushion for it. When the uterus is artificially drawn downward, this state of the pelvic contents becomes apparent, for up to the moment when the utero-sacral ligaments are stretched and oppose further descent the organ yields with but gentle resistance, as of a floating body which is slowly drawn downward."

Dr. Emmet, speaking of the support of the uterus, quotes Savage as follows: "A plane passing horizontally backwards from just below the sub-pubic ligament to the attachment of the utero-sacral ligaments at the sacrum would indicate the level where the utero-sacral peritoneal folds pass from the pelvic organs to the pelvic wall. It follows a slightly curved line from the vestibule to the uterus and through the utero-sacral ligaments it is attached to the sacrum."

"When these structures are intact they constitute an important line of mutual support for the vagina, uterus and bladder."

If we acknowledge then that the uterus rests on this plane, it is shown by hydrostatics that a floating body is acted on by two equal forces in opposite directions, one vertically down through the center of gravity of the body itself, the uterus in this case, the other vertically up through the center of gravity of the volume which is occupied by, in this case, the pelvic floor in which the uterus rests. If the body is at rest then these two forces must

lie in the same vertical line, but the question of stability of this equilibrium depends upon what happens when the floating body is tipped slightly. If the forces bring it back to its former position, the equilibrium is stable, if they make it tip still further the equilibrium is unstable. But as Dr. Skene has said, "The axis of the pelvis is backward and downward, while that of the abdomen is perpendicular, so that the pressure is indirect from above," then it is evident that the uterus, if it does float, is in unstable equilibrium, and as each author varies as to the degree of decline to the normal uterus the amount of stability varies according to the tonicity and condition of the guy ropes, the ligaments, the pelvic floor and the uterus itself.

That this condition is not Nature's primary method of supporting the uterus, but the result and outcome of evolution, a study of the lower animals will show. To quote Pozzi, "There is then but one point of attachment where the uterus is at all firmly fixed, namely, that of the posterior ligaments, and as they are inserted where the organ is thinnest, evidently its position may be compared to that of a pyramid balanced on a point. This paradoxical condition does not exist in the lower animals, but is an anomaly in the animal kingdom, explained by the upright position of the human species."

271 CLINTON AVENUE.

TRANSACTIONS OF THE WOMAN'S HOSPITAL SOCIETY.

Meeting of April 26, 1904.

The President, J. RIDDLE GOFFE, M.D., in the Chair.

COMPLETE LACERATION OF PERINEUM.

DR. JAMES N. WEST.—A woman thirty years of age came under my care four years ago to be treated for sterility. I found that she had a retroverted uterus with adhesions, and opened the abdomen, broke up the adhesions and did hysterorrhaphy. A year afterward she became pregnant, aborting at the fourth month. Nine months ago she again became pregnant and I saw her in consultation on account of the persistent vomiting when she was $2\frac{1}{2}$ months pregnant. The woman was greatly emaciated; was not able to digest or retain anything. After trying the usual remedies, she was transferred to the Post Graduate Hospital. For about three weeks I thought I would have to induce abortion, but having operated for sterility, I held out longer than I would have done otherwise. Finally she recovered from the vomiting sufficiently for her to retain a fair amount of nourishment. In a little over a month she was sent home. The vomiting persisted all through the pregnancy. Labor lasted two days; each day set in with vomiting. She was absolutely unable to retain medicine or food by the stomach. Her strength was very low. A comparatively short time, after real pains had set in, she ceased to make any bearing down efforts. The presenting head was in an occipito-posterior position. The perineum was extremely rigid. The vaginal orifice seemed almost as small as in the non-pregnant state. The pulse rose, vagina felt hot and dry. I made up my mind to deliver her at once. I put on the forceps and attempted to rotate the head but was unable to do so without using more force than I wished. I pulled the head straight down, carrying the chin under the pubis. I did this gradually, and the baby was delivered, but the woman was torn from within an inch of the cervix clear through the perineum, sphincter and everything, affording a beautiful opportunity to study the macroscopical appearance of the perineum and posterior wall from the outlet almost to the cervix. I think the laceration went very near Douglas' cul-de-sac. One end of the sphincter appeared to stand up in a little mass of tissue about as large as the end of my finger. The baby weighed twelve and one-half pounds. The conservatism of Nature is here clearly shown, when we consider the woman suffered so from lack of nutrition all through her pregnancy, and yet the baby weighed twelve and one-half pounds.

I repaired the vagina and perineum and used silver wire sutures

all the way through. The wires have had a decided splint-like action in holding the torn parts together, both of the vagina and perineum proper. There has been no leaking, this being the fifth day since the operation and everything looks perfectly satisfactory.

The interesting features of the case are these:

1. Successful operation on a retroverted adherent uterus for sterility.
2. Severe vomiting of pregnancy.
3. Occipito-posterior position, cessation of pains, forceps delivery.
4. Complete laceration of posterior vaginal wall and perineum with immediate repair with silver wire.
5. The unusually large size of the child notwithstanding the poorly nourished mother.

DR. GRAD.—I would like to ask Dr. West the cause of the adhesions that he was called upon to operate for; whether he suspects that the case was one of gonorrheal infection or not.

DR. WEST.—I saw nothing to indicate any gonorrheal infection. This condition is not always due to gonorrhea. The tubes and ovaries were normal, but the uterus was bound down from the fundus to the cul-de-sac. The adhesions were broken and the uterus and adnexa brought up.

DR. GRAD.—The subject of adherent uteri and appendages is one of great interest, little is known of it, and while it is plain that a great many of these cases are due to gonorrhea, it is a question whether all are due to that kind of infection. Of course the fact that we cannot find evidences of gonorrhea does not necessarily exclude that particular infection, because we know that in cases of positive gonorrheal infection, all evidence of such infection may disappear in a short time.

PUERPERAL SEPSIS.

DR. GRAD.—The patient was a healthy woman. She complained of a great deal of pain on the left side all through the pregnancy, particularly during the last month; the cause of the pain could not be traced.

She went into labor. The forceps were applied and a child weighing $9\frac{1}{2}$ pounds delivered easily; there was no tear in the vagina, cervix or perineum. For two days there was a normal temperature. On the third day there was a sudden rise preceded by a chill, and examination showed the uterus not painful, and normal in size. The patient went from bad to worse and developed a very severe attack of puerperal septicemia. There was not a tear in the genital tract. The forceps delivery was done under careful asepsis. Finally, about three days after the temperature had been going on, a mass was felt on the left side of the uterus which was exceedingly painful and it was thought that this mass might be a pus-tube. On opening the cul-de-sac a very much thickened tube was found.

I tore the tube away from its uterine attachment—there was

no pus, only a little serum. The case went on and in five weeks the temperature became normal, the patient making a good recovery. About four days after the child was born, it began to run temperature. It developed abscesses over the wrist, elbow, and a few over the sternal notches and the ribs and died a few days later. The point of infection could not be determined. There was no evidence that it came from the umbilicus.

No pus appeared at any time after the posterior section. The case was very stormy and severe. Temperature at times 106. We used anti-streptococcic serum and Credé's ointment. Whether these measures helped or not it is difficult to say.

DR. GOFFE.—As to the source of the infection in the puerperal sepsis, while we like to look for other causes than external infection, internal infection is rare. I am inclined to think that in all these cases there has been some slip in the asepsis. Probably that is the case here.

DR. HARRISON.—I was attending recently a woman with severe pyemia. I think she was content with the termination of her case,—a stiff joint. In this case I used collargol by intravenous injection.

In the New York Infant Asylum a case of septicemia was found on the 1st of April. Two injections of collargol were given and the improvement was marked—not so much on the first day as on the second. The fever dropped, and the patient was convalescent in a few days. I wish to lay the strongest emphasis possible on the efficiency of collargol. The great point, one which I think ought to commend itself to the attention of every man who uses a method to cure these cases, is the fact that if it does not do any good, it does no harm. That cannot be said of many other remedies.

One of the best methods for the treatment of these cases is Pryor's method—opening up the cul-de-sac and using an iodoform gauze packing.

DR. WEST.—We have infection, however carefully we operate. In a given number of instances, no matter how careful we have been we have had occasionally a case of sepsis. We hope to reduce the number to a minimum, but there is chance for infection. The probabilities are that in this case infection occurred as in infection of an abdominal wound.

DR. HARRISON.—I agree with Dr. Goffe that the doctrine of auto-infection is the most dangerous that can be promulgated. In my whole experience I have not had a single case of auto-infection. Every case of this kind I have had that unfortunately died, died at the hands of the obstetrician.

DR. BISSELL.—I recall a case, reported by me eight years ago, which I have always considered one of auto-infection. The patient had no attendant at the time of her confinement. The placenta, fetus and membranes were expelled intact—fetus dead. I made no digital examination of the genitals at that time, yet within forty-eight hours she showed every symptom of se-

vere sepsis. With persistent intrauterine irrigation she recovered. Two months after her confinement I removed a pus tube from her right side. The tube had been recognized as diseased in the first month of her pregnancy.

I recall another case upon whom I did an immediate repair of an extensive lacerated cervix. During the repair I was stuck in my finger several times. The woman became extremely septic and I had an infected finger.

DR. GRAD.—I brought up the question of the cause of infection to get the opinion of the members, to know whether they believe it possible to have auto-infection. If so, I believe this is one of those cases. There was no laceration, the uterus was not handled, there was full dilatation at the time of the operation. When the forceps were put on only the tips of the instrument entered the uterus. They were sterilized; the hands were not used. How did the sepsis get in? Dr. Adler, who is very much interested in blood infection, believes, with Dr. Carmalt, that there must be cases that carry infection in their own blood, and the focus of infection starts at some point where germs are deposited from the blood stream. The phagocytic action in the blood may be lost in these cases. Why should the baby have become so profoundly septic in so short a time if the blood conditions were good? All these points about the case make me believe it may be one of those rare occurrences.

ECTOPIC PREGNANCY.

DR. BISSELL.—Mrs. L., age 27, married twice. By first husband had two children, $6\frac{1}{2}$ - $5\frac{1}{2}$ years ago respectively. Second marriage 3 years ago.

Six months after marriage aborted a five months' fetus. Within the next fourteen months aborted again—a two months' fetus. From that time to March 13, 1904, she was regular and in perfect health. On March 13th she began to flow freely. She considered it her menstrual flow, although one week before her time. This flow continued more or less profusely until the day she was operated on, April 12, 1904. She expressed herself as feeling weak, but had no pain or uneasiness in the pelvis, nor did she experience the slightest pain when examined. After operation she recalled having had three slight attacks of pain during the four weeks she flowed.

The interesting feature of the case is that no symptom of pregnancy presented itself.

I questioned her again and again regarding pain, before operation, but only after operation did she speak of it. When examined in my office, I could feel a thickening on the left side.

The flow kept up for four weeks in spite of every effort made to stop it. I concluded there was something back of the endometrium to cause the flow. Even on the operating table she felt no pain or uneasiness. Under ether a mass came to my attention which I did not feel at my office—a floating mass which could be put up under the pelvic bone or in the cul-de-sac.

On opening the abdomen I found clots of blood. Adhesions about the broad ligament had been partly destroyed during the examination under ether. Whether we squeezed the blood out of the tumor through the apparently patent Fallopian tube, or whether the blood came from the breaking up of adhesions I do not know. It is the first of ectopic gestation I have had without any of the symptoms of pregnancy.

The mass on the left side proved to be a tubo-ovarian abscess.

DR. BISSELL.—The second case I present is one of

DIFFUSE SUPPURATIVE NEPHRITIS,

with a greatly distended pelvis of the kidney and ureter. Five months previous to operation the patient suffered much from pain in the right side. A tumor could be felt extending from the kidney region to the umbilicus. The urine passed at night was clear and with but few pus cells in it; the urine passed during the morning was cloudy and full of pus. The tumor was always smaller in the morning than at night, but never completely disappeared until the morning of the operation (she having been kept in bed twenty hours previous to operation). An X-ray photo was taken with negative result. The patient had been examined by Dr. H. D. Nicoll and Dr. W. T. Bull. An incision was made in the lumbar region. The kidney was found firmly attached to the surrounding structures from which it was with difficulty separated. The pelvis of the kidney and ureter was very large and capable of great distention with a capacity of from 10-14 ounces of fluid.

The ureter proper was not involved. Each vessel was ligated separately with catgut and the wound drained with a narrow strip of iodoform gauze. Union was complete and patient well in twenty-four days.

DR. BROWN.—I was present at the operation, and was much interested in the conditions found. Dr. Bissell believes from his experience that No. 1 catgut is amply sufficient in all abdominal work. He used it on those vessels. I must confess I would feel a little uneasy after the exclusive use of such small sizes. I, personally, use No. 2.

DR. GOFFE.—Did you tie the vessels separately or en masse?

DR. BISSELL.—Separately.

DISCUSSION: THE FEMALE PERINEUM.

Is there a perineal body, and shall we use that term? How define the perineum?

DR. CARMALT.—As to the question of definition, I will quote from Morris: "The term perineum has been variously applied by anatomists firstly, in its original and general meaning, to the soft parts connected with the pelvic outlet; secondly to the anterior or genito-urinary column only of these parts; and thirdly, to the tissues supporting the vulvo-vaginal and ano-rectal passages.

"It is here employed in the first and broader sense, the expres-

sion 'perineum proper' being used for the second application and that of 'perineal body' for the third."

I would like to speak of a specimen I have here, showing the pouting downward of the perineum, in an old nullipara. Cadaver was filled with plaster to maintain position, then put in formalin, afterward dissected leaving the levator ani on both sides.

In the specimen the fibers of the muscles in the perineum are misleading on account of the pouting downward, the fibers passing almost anteroposteriorly in the body that had been formalized. It shows how the sphincter ani is a migration off from the same levator plane. The fascia pass outward, the fascia under the levator and sphincter or border being intimately connected one with the other.

In the female monkey the levator ani muscle is attached to the brim of the pelvis along the ilio-pectineal line. The white line is non-existent.

The aponeurosis of the levator ani is attached to the ilio-pectineal line as in the monkey. It is fused with the obturator fascia, making a white line. No splitting of the obturator fascia. Transversi perinei are cut away from both sides in the specimen shown.

DR. CARMALT read a paper on

THE PERINEUM AND PERINEAL BODY.¹

DR. WEST.—There is one function in defecation not dwelt upon by Dr. Carmalt as fully as possible, and that is the contracting power of the rectum itself, observed by me in a case in which I was compelled to pass a high enema tube for several days, a number of times. There was powerful contraction beginning at the top of the pelvis, coming down on the finger, to the anus, contracting with force necessary to throw anything out of the rectum that was in it. The powerful coat contracts in that way. I think that is a very important factor in defecation.

DR. GOFFE.—In my relations with the students at the Polyclinic I have been "put to my stumps" to explain the perineum. Dr. Emmet says there is no perineal body except in the mind and imagination of the man who talks about it. In operating are you going to build up a perineal body or not? What should one say about it?

After studying long and industriously to find a way of presenting it to make it clear to students I adopted this method:

The floor of the pelvis may be divided into two distinct groups of tissue, one representing the levator ani muscle, and the other the perineum. The perineal body contains nothing different from the rest of the floor of the pelvis, and we simply have been in the habit of calling that triangular part of the pelvic floor the perineal body. I define the perineum as follows:—It is simply the skin that covers the quadrilateral space between the anus, the fourchette and the tuberosities of the ischii, plus the tendon running in the median line.

¹See original article, page 228.

All the rest of the floor of the pelvis is made up of the levator ani muscle. I mean by the levator all the muscles in the floor of the pelvis, viz., the constrictor vaginæ, the pubo-coccygeus, the external and the internal transversus perinei, etc. They all come under the class name of levator ani. Ultimately the function of all combined is to elevate the anus. That is the supreme function, though some of them have additional duties. The perineum as thus defined is a perfectly passive body; it can do nothing; its functions are passive. The first function is to cover a certain amount of anatomical space or tissue; second, to give attachment to the levator ani muscle. I say "give attachment" for while we can trace fibers from the ramus of the pubes of one side around the rectum and back to the ramus of the other side, they are drawn together in the middle line of the perineum and attached to the tendinous raphe. That represents the point of insertion of the muscle.

The functions of the levator ani muscle are to make the floor of the pelvis; secondly to lift the perineum over the head of the child in parturition; thirdly, to lift the anus or perineum over the fecal matter in defecation. Those are the three functions of that muscle. A fourth might be added, which is to assist in the act of copulation.

When we come to injuries, what happens when the perineum is torn in the middle line? The attachment of the levator ani is destroyed and therefore it is robbed of its functions.

If torn in the middle line, the tendinous center is split and the transversus perinei muscles are set free. They retract to either side, and allow the rectum to prolapse between the two. We must bring back the transversus perinei muscles and restore their attachment. When that is done, the functions of the levator ani muscle will be restored.

In relation to the position of the uterus, I teach very positively that the perineum does not support the uterus. They ask how I explain the importance of restoring the perineum in order to prevent the descent of the uterus. I say if the transversus perinei muscles are retracted and the tendinous center is drawn to either side, the rectum prolapses and brings a new force into play, one which was not there before. We have destroyed the function of the levator ani in defecation, when intraabdominal pressure is brought to bear, the floor of the pelvis is forced down, and as the levator ani no longer has the power to lift the anus (perineum) the fecal matter has a tendency to come out in front thus producing a rectocele. The tissue stretches to a certain extent, but the distance between the cervix and the anus is a more or less constant quantity and as the anal end of the posterior vaginal wall is carried down the cervical end is dragged after it. This is a new force pulling on the cervix and turning it into the axis of the vagina with the resultant retro-displacement of the fundus. The perineum is repaired to prevent or to overcome this new force and restore the function of the levator ani muscle.

The levator ani is active tissue, the perineum is passive tissue. The levator ani is the important part of it, and the restoration of its function must be kept in view in operating upon the perineum.

DR. CARMALT.—The perineum is not passive; it contains unstriated muscle.

DR. HARRISON.—Of course, it will do for your students, but then you see, in these discussions it is well to have some standard, and unless the reader could have reference to your definitions, he would be at a loss to understand what you mean if you speak of the perineum. In giving an explanation, unless you went into detail, no man would understand what you mean, because your definition of perineum is entirely different from that accepted by most authorities. In teaching students they have your definition, and they understand your position. The world at large doesn't know that.

I agree with Dr. Carmalt in the ground he has taken in regard to his definition of the perineum, and that is the idea I have always entertained of it.

The great value of Dr. Carmalt's exposition is, when we understand the functions of the tissues, then when some injury has been produced, we know how to go to work to restore the parts to normal condition. I think the great value of that exposition, therefore, is in showing us the exact importance of the functions of the levator ani. No attempt at the restoration of these parts injured by parturition or otherwise, will be successful, if it does not recognize these relations.

DR. TUCKER.—While connected with the Polyclinic, I tried different methods—that of Hager among them—of operation upon the perineum, and I found that when we made our dissection, we took up only a skin flap, and brought it into apposition; and if we had successful union by first intention, the cosmetic effect was good; but in a very short time, there was as much rectocele as before operation.

In seeking for an operation that would fit the indications, I was discussing the subject with Dr. Hunter McGuire of Richmond, Va.; he said, "I sometimes use a purse string suture." I thought by passing a purse string suture within the vaginal cavity, I would change the condition of affairs.

In doing the operation I start the incision at the caruncle on one side, follow the junction of mucous membrane and skin to caruncle on the other side; with a pair of artery forceps I dissect the flap off close and have the muscle structure.

Having denuded the parts I start with the suture within the vagina, and carry my first suture under the mucous membrane about midway between the caruncle and the highest point of the rectocele along and down the side of the ramus of the ischium, until I reach the lower part, where the sphincter muscle is, here: I run the needle down the side of the muscle and bring it back to the center, re-enter it, catching the fibers of the muscle on the other

side, bringing it round in the same way on this side, well up along the side of the pelvis, and catch it with artery forceps.

The other sutures I saw used in the Polyclinic to increase the support of those parts. To keep the outward strain off, I bring it down from a point midway between the first suture and highest point of rectocele to the center of the denuded tissue, then bring it back, right up opposite to where it was passed in.

Those are the only two deep sutures I use. These sutures are No. 3 catgut to prevent it from cutting through the tissues; for that purpose it is preferable to silkworm or wire.

I then start at the highest point of the rectocele and bring the mucous membrane together with buried catgut sutures until I reach the highest deep suture, then tie the suture, cut it off close, then continue the buried suture to bring the mucous membrane together until I reach the first suture passed, then I tie that and continue suturing fascia and mucous membrane until closed. Every suture in the vaginal cavity is buried, every tissue is brought back as near to natural position as possible, because the greatest point of resistance there is within the vaginal mucous membrane. This is an operation that takes about ten minutes. The patients are allowed to get up in a week.

DR. HARRISON.—I infinitely prefer to use silkworm gut; the stiffness of the silkworm is advantageous there, in those two important sutures. The larger the catgut the more danger of infection; therefore I emphasize, with Dr. Bissell, the benefits of using No. 1 catgut. With silkworm gut there is no danger of infection, and its stiffness is an advantage in bringing up the parts into their true relations, and does this much better than yielding catgut.

DR. BROWN.—Dr. Harrison spoke of catgut. There can be no risk or doubt of the asepsis of catgut if the sterilization is done by heat. When this agent is used there can be no difference in the sterility of the smallest size gut and the largest size. When catgut is sterilized in cumol at its boiling point, we have a sterilization at 360° F. No germ life or spores can withstand this temperature, and every ligature whether small or large must be absolutely sterile. When we attempt to sterilize our gut by soaking it in antiseptic solutions I appreciate that the smaller the gut the more likely it is to be sterile.

Dr. Tucker deserves to be congratulated on his admirable ideas on injured perineum. I have not done his operation, but I will look it up in print and try it. After all, I don't believe there is any method in existence that can improve on the Emmet operation for the repair of the perineum. The principal object is to pick up the torn attachments of the levator ani muscle; when we do it, our results are perfectly satisfactory in a large majority of cases. The posterior wall of the vagina is brought up against the anterior wall, and stays there. Where a woman is very fat and there is a great deal of posterior vaginal wall, we do fail sometimes in picking up the muscle and fascia. Six

months after operation the walls are lying well back. I have seen it, no doubt all of us have. It is not the fault of the operation, but our own fault in not going down to the muscular tissue and the large amount of fat in the perineal body. 'I am perfectly satisfied with the Emmet operation in regard to going up in the angles. If I modify it, I use Dr. Cleveland's stitch; the principle in both operations is the same.

In most of the bunching operations, I think the result is not reached so well and is not anatomical. I speak of it in general, not in relation to Dr. Tucker's operation. I speak of it because the Emmet operation has not been spoken of to-night. There is no operation that can equal it in meeting so well the anatomical indications, nor is there any operation of its kind that can give better clinical results.

DR. HARRISON.—When Emmet operated, I was with him, and, when he developed his method, saw him improve from one operation to the other until he finally adopted that method that we use.

Emmet at that day was certainly the greatest plastic surgeon, and did as admirable work as anybody could do. I have performed his operation, always with satisfactory results; he did regard mechanical principles in constructing his perineum, but in the gradual evolution of the operation the tendency is, in that as in every other department of medical science and especially in surgery, toward simplicity. We reach perfection in any operation as we simplify, and I think the advantage of Dr. Tucker's operation is that it is a simpler operation. Not every man can do Emmet's operation; it requires an expert. Where a practitioner of limited experience could perform Dr. Tucker's operation with success, he would fail with Emmet's. Moreover, I think it is imperative, in this evolution, that we should have regard to physiological relations. In the older methods we restored parts that did not naturally belong together; nowadays we attempt to restore parts by having regard to the original lesion. Unfortunately the perineum does not always tear in the median line. The tear is very often down the sulci. In modern surgery we take away nothing or only cicatricial tissue to restore the parts to their original integrity. I formerly dissected up a flap, bringing the parts together, but nothing was taken away; in the method adopted by Hégar and others, there is great loss of tissue. Parts are cut away in order to bring together raw surfaces that are not injured at all; in that respect I think we do not have regard to physiological relations. That is one objection to it. I think the modern method simpler and more easily performed.

DR. GOFFE.—I think Emmet's operation magnificent. Many men have difficulty in understanding it and carrying it out. I was more or less a spectator of Emmet's evolution of this operation, and I thought it most excellent. I believe it is to-day, but if we can simplify it and get as good results, the simpler operation becomes preferable.

I modified the operation very much as Dr. Tucker has de-

scribed to-night. This was some years ago when Dr. Tucker was my assistant. All the sutures enter the mucous membrane of the vagina and pass downward toward the fourchette with the idea that the fascia of the vagina is more resistant than the tissue of the rectocele through which the suture passes or is buried; when the sutures are tightened they draw up the rectocele into the vagina instead of dragging it down. When the rectocele is thus drawn up into the vagina the transversi perinei are brought together in front of it in their normal position. The first three stitches relieve the rectocele; the last three restore the attachment of the perinei.

DR. WEST (to Dr. Goffe).—When we started this discussion it was on the definition of the perineum and then you proceeded to describe the operation for laceration of the perineum and various results, bringing together muscles, etc., a question which I have not discussed at all. As to definition of the perineum, a criticism I would make is that while your explanation of it is excellent, and perfectly correct and anatomical in every way, I do not believe it to be the right definition of the perineum. I believe the perineal body should include muscle, skin, and all tissues between the anus and vagina to the pelvic outlet, as Morris says.

Nor is it an element of the levator ani muscle. The levator ani muscle is attached higher and further forward than the transversus perinei. The fibers of the transversus perinei are smaller, remains of a very large muscle occurring in lower animals.

DR. GRAD.—When we speak of the cheek, for example, we will not consider the skin alone, but take in the muscles as well. In speaking of the perineum we could not speak of the skin as being the perineum, we would have to include the structures under the skin in that particular region. While I think for the purpose of teaching, the definition of Dr. Goffe is excellent, and defines and tells the student exactly what is meant, considering it as an explanation of the functions of a space in anatomy, I think it will not be in accordance with the usual methods.

DR. HARRISON.—We must all fall back on a principle enunciated by Aristotle, who maintained that the cause of difference of opinion amongst men was the want of proper definitions. A man in writing of the perineum could have his own views and hold them individually as tenaciously as possible, and no man could object, but in giving definitions a man should make them plain.

H. GRAD,
Secretary.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY.

(Continued from p. 80, July number.)

DR. ROBERT L. DICKINSON, of Brooklyn, N. Y., read a paper entitled

HYPERTROPHIES AND INFLAMMATIONS ABOUT THE URINARY MEATUS.

He stated that their frequency, and the suffering caused gave them an importance out of all proportion to their minute size. They were overlooked because they were hidden among folds of mucous membrane. They were explained by embryology. A tiny ribbon ran from the rear of the vaginal opening forward on each side of the vaginal and urethral openings, across the vestibule to disappear beneath the clitoris. This fold was persistent in those cases where the hymen ran forward of the meatus, or the meatus seemed to open on the anterior vaginal wall. This fold was enlarged by friction or traction to produce the flaps or labia hanging out each side of the meatus. They were found only with corrugated labia. Dilated or dilatable urethra often accompanied them. The urethral glands opened near the apex of the flaps. They were long, running down into the anterior column of the vagina. Swelling from infection differed from hypertrophy. The cure of chronic inflammation was only feasible by obliteration of the glands. A fine probe passed into the bottom of the gland rendered the vestibulo-vaginal surface tense; the cautery wire cut out the probe. For piles of the meatus, the cautery wire should be used after cocaine; for prolapse or dilatation of the urethra, resection of the anterior vaginal wall or paraffin injections into the urethro-vaginal septum produced a sigmoid profile.

DR. ELY VAN DE WARKER, of Syracuse, N. Y., followed with a paper on

SURGERY OF THE FEMALE URETHRA.

The subject was not treated exhaustively, but by reference to such cases as were seen and treated by the author.

The urethra appeared like an insignificant part, its vital relations were negligible, its anatomy was relative, and acquired its importance from its related organs; but it might be said to epitomize a large share of the suffering that woman's pelvic organs inflicted upon her. The amount of disturbance caused by a simple irritation of the urethra to the bladder and indirectly to the kidneys afforded striking proof of the validity of reflected nervous disturbance, in this respect obeying the law that nerve

centers having the widest sphere of related disturbance were situated at the natural openings of the body.

The term sacculation was regarded as better than the old one, urethrocele. Its major cause was mechanical, as inflammation alone was not adequate to its production.

The urethra might be said to belong to the perineal rather than the pelvic zone of organs. The walls of the canal depended in a measure upon the support of the perineal body. It was often associated with long-standing rupture of this part. Restoration of the perineum was therefore essential to the treatment of the sacculation. When large, an elliptical flap of the walls of the urethra was removed, and the edges brought together by fine silk sutures. Prolapse of the mucous lining of the urethra the essayist had generally associated with long-standing urinary troubles of various kinds. It was, therefore, probably due to a gradually progressive condition, and was a typical ptosis and complied with the general law of genital prolapse. After removing the prolapsed portion, there was a marked tendency to recur unless the conditions which gave rise to it were treated and cured. Bladder incontinence and dribbling were often lifelong conditions. That this was due to a defective action of the sphincter vesicæ was more than doubtful. Dribbling was one of the symptoms of hysteria, of which a striking case was given in illustration.

Narrowing, by operation, the bladder and end of the urethra, linear cauterization at this point had afforded relief. Any treatment was liable to fail and relapses were frequent. The powerful influence of hysterical disturbance over the urinary tract was constantly observed. Dribbling was the related phase of retention. The treatment of this form was more satisfactory.

The urethral stricture, when of small caliber, was frequently found with dysuria and dribbling. The author referred to but two cases of urethral mucous polypus, and concluded that they must be rare. These growths ought never to be twisted off, as the tissues were too friable. Removal of the growth through the mucous membrane so that no stump was left was the proper procedure.

Stricture of the urethra, in the author's experience, was common in women. Any condition that tended to produce linear or annular thickening thus led to stricture. Specific urethritis might produce stricture, but it was not the frequent cause alleged by some writers. While denying that stricture in the female was the analogue of the condition in the male, these writers were constantly referring to a common cause for the condition in both sexes. The female urethra ought always to be explored by Otis bulbs. The matter of stricture of the female urethra was to-day in the same condition that it was in the male twenty-five years ago. Stricture of large caliber might be located and measured by the bulbs, but never by the sound, as was recommended by old systematic writers. Annular stricture of the meatus was the form most commonly met with. These ought to be incised and made to heal

in an open condition by frequent passage of the sounds. Dilatation alone was too painful and required too much time.

As to eversion of the mucous membrane at the meatus, its prototype was the fusiform stricture of Otis. Its surest cure was by dilatation.

Caruncle of the urethra was a common occurrence. Removal, including the whole thickness of the mucous membrane, being careful not to leave a stump, was an effectual cure.

DR. THOMAS J. WATKINS, of Chicago, disagreed with Dr. Dickinson in regard to the valves of the urethra, saying that there was no relation between their size and the size of the carunculæ myrtiformes, and that one frequently saw rather large urethral valves where there were little or no remnants of the hymen.

Relative to the diagnosis of infection of Skene's urethral glands, he directed attention to a paper read by him some two years ago entitled "Notes upon the Diagnosis of the More Common Gynecologic Diseases." Frequently one of these valves was much larger than the other, and he had contended that the unequal size of the two valves was diagnostic of infection. One could palpate the gland by engaging the glands between the palmar surface of the thumb, finger and pubic bone. He took it, that the enlargement of the distal portion of the urethro-vaginal septum was always the result of infection; that hypertrophy was also the result of infection, and that consequently a thickening of the urethro-vaginal septum was nearly always diagnostic of an infection.

As regards the treatment of infected Skene's glands, he had obtained ideal results by incision of all the tissue between the lumen of the gland and the vaginal canal, and by excision or by thorough cauterization of the diseased mucosa.

He was inclined to disagree with Dr. Van de Warker relative to prolapsus in these cases, as on examination of a large number of dispensary patients and quite a number of patients in private practice, he had almost never detected backward displacement of the urethra. The displacement was always downward.

DR. CHARLES P. NOBLE, of Philadelphia, in referring to the treatment of eversions of the urethra, said he had been in the habit of treating them in one of two ways. Where the eversion was not extreme, he had succeeded with a cautery wire such as nose doctors used to cauterize the inferior turbinated body, making one or two longitudinal cauterizations, and in cases which were extreme he had usually amputated the lower end of the urethra. In one of two cases the eversion was extreme. In one in particular the entire urethra up to the bladder was everted and sloughing, so that it was plain, if the patient was treated by amputating the mass, there would be no urethra left. He therefore made longitudinal incisions, removing some of the sloughing tissue, pushed the urethra back *in situ*, stitched it in place, and got a good result.

DR. A. H. BUCKMASTER, of Charlottesville, Virginia, did not believe in using the cautery in erectile or semi-erectile tissue like

that found in the urethra. The burn was followed by reflex symptoms, distortion of the meatus, and by scars which were an invitation for the formation of cancer. He did not see how any intelligent man could deny the close relation between scar tissue and cancer. If it was necessary to cut away the tissue about the mouth of the urethra, then it could best be done with a pair of fine scissors. By their use one could take exactly what he wanted to take. By stitching the wound up afterwards with a small round needle, no raw surface was left to granulate. A not uncommon cause of vesical irritation was a thickening of the urethral mucous membrane due to hypertrophy and congestion. This thickened mucous membrane might in time obstruct the passage, so that one might have the same symptoms that accompanied an enlarged prostate. The cause of the condition was the advancing child's head in labor. It caught the mucous membrane against the symphysis and skinned it off of its submucous bed. There might or might not be a tear. The result was a rosette of swollen and hypertrophied mucous membrane at the opening of the urethra, that was called a urethral caruncle. It was properly a urethral hemorrhoid. This was not the only cause for vesical irritation. It occurred in neurotic patients without any physical basis, just as disturbances of function occurred in other organs of such patients.

Inflammation was another cause and a common one. He did not mean inflammation of the wall of the bladder, which was rare unless produced by the physician, but inflammation of what he called the posterior band. Contrary to the book on anatomy, the uterus had but two supports; one was the anterior band, which was triangular in shape and included all the tissues that bound the uterus to the anterior wall of the abdomen and pelvis. It was composed of peritoneum, the walls of the bladder, the urethra and the anterior vaginal wall. It was very strong and unyielding, on account of the large amount of fibrous tissue it contained. The other support was the posterior band. This included all the tissue that tied the uterus to the posterior wall of the pelvis. It was composed of peritoneum and the utero-sacral ligaments. It was very elastic and allowed the cervix to be pulled to the vulva without harm. Inflammation of the tubes or the ovaries caused this band to become filled with fluid and like a rope in this condition it shortened. One could prove this by examining a patient with such an inflammation, and note how the uterus was drawn high up in the pelvis. As the inflammation became less, the uterus might be felt to be lower and lower. The difference was perceptible from day to day as the patient improved. Now, pulling on the posterior band would pull on the anterior band and in time the neck of the urethra would be involved in the strain. This was followed by vesical irritation. The statement might be proved by seizing the cervix with a tenaculum and drawing on it vigorously, and the same vesical uneasiness would be complained of.

It seemed like a paradox to the author to say that elongation of the posterior band would also produce vesical irritation, but such was the fact. If a woman was on the back and there was elongation of the posterior band, the uterus would sink in the pelvis and a full bladder would carry the fundus backward. There was nothing to make it return when the bladder emptied, and it remained there subject to the downward thrust of the abdominal pressure. The uterus would become congested and heavy, and in this way might drag on the neck of the bladder, producing vesical irritation.

When the mucous membrane was too voluminous, Emmet advocated slitting a hole in the urethra and drawing through the excess, cutting it off, and thus disposing of it. The speaker had in a recent case been somewhat more radical, in that he opened the whole canal to the neck of the bladder, took in the slack, and then brought the edges together, with entire relief of the symptoms.

DR. LAPHORN SMITH, of Montreal, took the view that the condition of the urine had a great deal to do with the production of irritation about the mouth of the urethra. Frequently professional friends had sent him patients, asking him to examine them for injuries of the urethra. On examination the mouth of the urethra was found inflamed over the ring of prolapsed mucous membrane, and after a trial of a week or two in rendering the urine non-irritating, this trouble had disappeared. He found that when these patients consulted him the urine was excessively acid and very irritating, and when he taught them to drink a good deal of water, and put them on alkaline treatment, the trouble disappeared, and as the urine became mild or alkaline, so the inflammation about the urethra disappeared and the extruded membrane returned to its normal condition. He opposed the use of the cautery in these cases, for the reason that we should not permit cicatricial tissue about the genital organs. He would rather make a clean-cut incision in attacking the lower ring of the urethra, or open up the urethra, removing the pathological condition in that way.

He had had two cases of primary epithelioma of the urethra during the last year. He removed them completely, also a fair margin of healthy tissue about them, and the patients were well.

He had had several cases of polypi of the urethra, and in these there was a history of long-continued acid urine.

DR. BACHE MCF. EMMET, of New York, stated that the bladder symptoms in these cases were often attributed to a wrong cause or causes. It was best to deal with them locally and endeavor to remove the cause on which they depended. In the hysterical bladder or neuroses generally, much would depend upon remnants of old inflammation of the tube or tubes. In holding the bladder more or less in a dependent position, the uterus moved with it. When the bladder was full, the uterus receded or was pushed back. When the bladder was empty, the uterus came for-

ward, and the bladder was held by the utero-sacral ligaments and fascia, so that when these parts became relaxed, there was a certain amount of descent of the uterus, which had an effect in preventing the complete emptying of the bladder. There was a lack of abdominal force from above, and this was of some import. As the muscular structure of the bladder was brought into play in these cases, hypertrophy was likely to occur, setting up possibly a urethritis, which was only a symptom first. There was a good deal of inflammation resident in these parts from old pelvic disease, and there must be necessarily a certain amount of mobility of the uterus. It put the bladder at a great disadvantage. Great effort was made to cure these cases of bladder trouble by building up the perineum properly and inserting a pessary, which would carry the cervix back in its proper position, and by raising the uterus to its proper level the bladder would be much improved.

DR. WALTER P. MANTON, of Detroit, Michigan, had found that a small piece taken out of the anterior vaginal wall had relieved symptoms in the majority of cases of sacculated urethra, but not in all.

About a year ago he had a patient whom he treated in various ways. He performed this operation with only partial relief, and at his wits' end to know what to do, he did Reynolds' operation for cystocele. In this case there was only slight sagging of the anterior vaginal wall, and no cystocele. But the operation was successful, in that the patient was entirely relieved of the symptoms of which she had complained for several years. As the result of this operation, the upper portion of the urethra, with the neck of the bladder, was drawn up, and relief of the symptoms followed.

DR. HOWARD A. KELLY, of Baltimore, had found it difficult to question his patients about masturbation. Once in a while patients came to him and confessed themselves of having practised masturbation. Occasionally he had timidly ventured to ask them, but he knew so little about it that he felt he could say nothing of importance from that standpoint, and his conclusions as regards his report and that of Dr. Dickinson's, which had appeared, were that Dr. Dickinson was speaking of one thing and he was talking about another thing.

He was struck with the labia of the urethra when living in Philadelphia fifteen years ago, at which time he made a number of sketches of them. Seeing the word 'labia' in Skene's little book written many years ago on the urethra, he wrote and asked him what he meant by it, as he desired to give him credit for priority. He asked him whether it simply meant the rounded margins of the urethral orifice, and Skene replied that it meant that and nothing else.

Dr. Kelly was certain from his examination of these patients that these labia of the urethra were not in any way associated with masturbation. The structures to which he referred were delicate, slender, tender *adnexæ*, not in the least thickened, or

altered anatomically, and they were just as delicate as the virginal hymen.

With regard to Dr. Van de Warker's paper, one of the most important things which confronted the gynecologist to-day was how best to deal with urethro-vesical incontinence in women from forty years of age up into the fifties, and while certain simple methods of operation, such as raising the vaginal vault, cystocele operations, the wearing of a pessary, oval resection under the urethra, were more or less successful, he had not found them satisfactory in the majority of cases, and sooner or later they resulted in failure. He had adopted this plan with extreme satisfaction in several cases, one of which was clear in his mind, of exposing the anterior vaginal wall, making a vertical incision over the internal orifice of the urethra, and dissecting away the vagina. Having severed the vagina from the urethra and bladder in this way, and exposing carefully the entire neck of the bladder, he passed three buried silk sutures on either side to pin the urethra and neck of the bladder up behind the symphysis in its normal position to prevent downward displacement or outward rotation of the urethra and bladder. In several instances he had also taken great pains to dissect out the sphincter at the neck of the bladder and uterus, bringing together the sphincter or muscular tissue of the bladder at that point in exactly the way one united the sphincter to the rectum when it was torn.

DR. GEORGE GELLHORN, of St. Louis, Mo., discussed the embryology of the subject as bearing upon the paper of Dr. Dickinson, and mentioned the four theories which have been advanced as to the development of the hymen. The labia of the urethra, he said, were of vulval origin, but in his opinion embryologically had nothing to do with the development of the hymen.

DR. DICKINSON, in closing the discussion on his part, took issue with Dr. Watkins relative to the matter of urethral labia. Furthermore, he had never seen urethral labia of the shape described by Dr. Kelly. However, there were a variety of shapes. They did not join and become a part of the hymen behind.

As to the treatment necessary for irritable conditions about the meatus other than that mentioned, he said it went without saying in this company that all medicinal and hygienic measures should be tried before operative measures were undertaken.

Atrophy of the labia majora allowed the meatus to protrude and to become infected. The meatus of the old woman stuck out and was constantly reinfected. In speaking of operations for incontinence and prolapse of the urethra, he objected to an operation of the kind described by Dr. Kelly as being unnecessarily radical and involving a large amount of dissection, when much quicker and equally good results could be obtained by ventro-fixation of the bladder. He had hung up the bladder in fully twenty cases, and the results had been astonishingly good. Ventro-fixation of the bladder could be done in women of sixty, because in old women most trouble came from irritable bladders.

Prolapse of the bladder could be studied only with the patient in the standing position, and so cases that were suitable for ventro-fixation could be decided only in the standing posture.

DR. VAN DE WARKER, in closing the discussion, said that incidentally in his paper, which he did not have the opportunity of reading in full, he referred to the importance of these urethral hymens, so-called, which he simply called tabs.

He did not agree with any of the gentlemen who had spoken in regard to some points. In the first place, if one would examine the urinary opening or meatus of an infant girl, he would find it distinct and coming together, constituting a different picture from the urinary meatus of the boy. It began back clear to the beginning when these parts began to assume their relative anatomical importance. While he would not say that they were congenital, they were closely post-congenital, and belonged to the early developmental anatomical period, the period of plasticity. He regarded them as simply subsidiary.

In speaking of types, he stated that their variety was simply infinite. Some were sessile, others bifurcated, and sometimes they ran together. In other instances they began at the upper margin of the meatus and dropped down over it. Sometimes they began in the lower margin. He thought we should eliminate the theory of their origin from vice, and should regard them as sanitary. The urethral opening of a woman was greatly exposed to infection. Simply a little fold of the inner labia protected it. Outside of that, the meatus of a woman had an external part, and if constructed on the basis of an open meatus, it would be constantly exposed to external infections. These tabs dropped over and closed it, except when the part was engaged in functional use. We had an analogue of the same condition in the male in the majority of cases in the prepuce, closing and protecting the urinary tract from external infection.

DR. EDWIN B. CRAGIN, of New York, read a paper entitled

PYELITIS COMPLICATING PREGNANCY.

The occurrence during pregnancy of a marked rise of temperature, with pain and tenderness on the right side of the abdomen, was always a source of anxiety to the obstetrician. Although several able articles describing the condition had appeared, it was not generally recognized that pyelitis was a not infrequent cause of the above symptoms. It might be confused with appendicitis, typhoid fever, or salpingitis. It occurred almost if not quite invariably on the right side. It was due to pressure on the ureter by the pregnant uterus plus an infection. This infection was usually descending and was usually due to the colon bacillus. The urine was acid, contained at first albumin and perhaps a few casts, soon followed by pus and bacteria. The prognosis was usually good. Induction of labor was seldom indicated. Medical treatment by urotropin, or allied drugs, with

ice-bag over the kidney, fluid diet, and large draughts of water was usually sufficient.

DR. ROBERT L. DICKINSON, of Brooklyn, N. Y., said that in this admirable presentation of the subject that was relatively new and understood in general by the profession, there was but one feature omitted, and that was the fact that these patients were severely ill. The family physician was gravely alarmed. The patient suffered, had high temperature, had severe abdominal pain, whether it were the fifth month or later, and most of the cases he had seen in consultation had been early ones, in which there was not only severe pain, but he had seen some flatulent distention suggestive of peritoneal involvement. In at least three ante-partum cases that had come under his observation, the pain was more prominent near the crest of the ilium than it was in the back. In three of the cases a diagnosis of appendicitis was given to the family before consultation with the attending physician, and he found that these cases had cleared up in a measure just about the time that an operation was thought to be inevitable. Of two cases seen post-partum, one in the wife of an obstetrician, and who was delivered by one of our most skilled obstetricians, there could not have been any ascending infection, any symptoms of trouble before delivery. The other case was catheterized by skillful nurses, but the infection was so rapid that probably there was a preliminary cystitis, with an ascending ureteritis.

DR. CHARLES P. NOBLE was interested to find that the experience of the essayist corresponded with what he had observed. Cases of pyelitis complicating pregnancy he had seen corresponded with the description given by the essayist, and they had recovered under the same treatment, keeping them in bed, minus urotropin, giving them plenty of water, etc.

As this was a relatively new subject, he thought by analogy one might say something about pyelitis in the non-pregnant woman. His experience with acute pyelitis in the non-pregnant woman had been similar. Where it was not due to tuberculosis or stone, all of the cases were inclined to spontaneous recovery by keeping them in bed and giving them plenty of water. This was the only treatment he had ever used, and they had all recovered. Within the last two months he had four cases that made good recoveries under this plan of treatment.

As to the diagnosis, in most of his cases there had been very little pus in the urine. As long as the patients had fever, there was some difficulty about the discharge of pus from the pelvis of the kidney, and as long as they did not discharge the patients had high fever. This was a point of value in the diagnosis in addition to what Dr. Cragin had said.

Concerning the differential diagnosis, these cases were oftentimes confounded with appendicitis. One of the four cases recently under his care was diagnosed as an acute appendicitis by an excellent physician. The patient was supposed to be acutely ill. He operated without making a complete examination, which

did not include the urinary findings, removed a normal appendix, and the patient got well from the acute pyelitis while recovering from the abdominal section. One of the four cases under his care was sent to him with a diagnosis of appendicitis; he made a correct diagnosis, and the woman was now getting well without having undergone an abdominal section.

DR. EDWARD P. DAVIS, of Philadelphia, had seen a number of cases of pyelitis complicating pregnancy, and clinically most of them had coincided closely with those described by the essayist. But he had seen two in which the symptoms differed considerably. One occurred in the puerperal period, eight weeks after a difficult delivery by version through a contracted pelvis, and in this case the left, instead of the right, kidney was involved. In the other case, for some time considerable doubt existed as to the diagnosis between a disordered kidney and infection of the gall-bladder. The pain, apparently obscure, referable to the right quadrant of the abdomen, radiated backward and deeply toward the loin, and a final diagnosis of mild infection of the gall-bladder being made certain by repeated examinations of the urine, restriction of diet was advised and cold applications made over the region of the gall-bladder rather than the kidney. At first, the symptoms were closely allied to those described by Dr. Cragin. He did not think we should ascribe too much importance to the localization of this condition. These cases did not have a localized disease of the kidney, but they were a part of a common infection with the colon bacillus characteristic of the condition which often attacked the entire excretory apparatus of pregnant women, and one reason for the success of the treatment in these cases lay in the limitation of diet, unloading the intestines, the free use of water, and the establishment of those conditions which bring about the free discharge of colon bacilli from the bowel as well as from the kidney. If one studied the cases of obstinate constipation in pregnant women, cases of intestinal toxemia and of pyelitis, he would come to the conclusion that the pregnant woman was very susceptible to infection with the colon bacillus.

DR. LAPHORN SMITH said in many of these cases of pyelitis complicating pregnancy the urine was very acid. It contained albumin and a few casts, followed sooner or later by the presence of pus and bacteria. The pregnant woman was liable to infection by the colon bacillus. Why were the ureter and kidney especially liable to infection? Because they were irritated. Their circulation was irritated by the constant, highly concentrated urine. During the early months of pregnancy these women did not drink enough water. Vomiting of pregnancy was of more common occurrence, and they could not keep the water down, consequently it was well to supply water by giving them salt solution. For his own part, when he was brought face to face with these women he at once put them on laxatives, and alkalinized and diluted the poisonous material by giving them several tumblerfuls of water a day, and very soon the pain and symptoms of which they com-

plained disappeared. He did not place much stress on pressure on the ureters, for every woman had pressure on these. He thought the condition was a general rather than a local one.

He emphasized the value of the use of urotropin in painful infections of the bladder.

DR. HENRY D. FRY, of Washington, D. C., did not like the explanation given in accounting for the frequency of the right pelvis of the kidney being affected. If the disease was more common in the latter months of pregnancy, or the last two months, say, he would be willing to accept the explanation that the pyelitis was due to pressure on the right ureter and to the fact that the fetal head was more frequently in the right oblique diameter of the pelvis; but the essayist stated that in the majority of cases it was met with in the second semester. In the last two or three months of pregnancy the fetal head could produce pressure on the ureter, particularly in a primipara. In a primipara, owing to increased intra-abdominal pressure, the head of the child was forced down to the pelvic cavity, and with it in the oblique diameter it would press on the right ureter. In the multipara the fetal head was raised up by the iliac pouch. The fetus did not remain in any one position for any length of time, and even if it did, the speaker did not see how it would press on the right ureter.

DR. HOWARD A. KELLY felt that the explanation of Dr. Fry was not only satisfactory, but he was inclined to attach a great deal of importance to antecedent movable kidney so frequently seen on the right side, with some blocking up of the ureter. He had seen many cases—he could not recall how many, two of which came to operation. In one he extirpated the kidney and found multiple purulent foci through the substance of the kidney. Labor was induced in the seventh month. The woman had infection of the opposite pelvis of the kidney, which he treated some years subsequently, before giving relief. Both sides were affected in that case. In another case, a Jewish woman, he extirpated one-fourth of the right kidney, suturing the rest of the kidney, and she recovered nicely, went on to term, and was delivered with the remaining kidney and what remained of the one resected. Not all of these cases went on quite so satisfactorily to spontaneous recovery, even under careful treatment.

DR. J. CLARENCE WEBSTER, of Chicago, said that about two months ago he saw an interesting case in which there was a large swelling of the kidney containing pus. It was four or five inches in diameter. The woman was seven or eight months pregnant. The question arose as to what to do, whether to evacuate the pus or remove the kidney; whether the pregnancy should be allowed to take its course or be interrupted, and the kidney attended to at a later period. He gave as his opinion that the latter course should be followed. He did so for the reason that if drainage of the kidney had been carried out, the suppurating wound might lead to sepsis after labor, whether the latter occurred immediately or at full term. Of course, the latter risk might be avoided by re-

moving the kidney, but such a radical measure should be avoided, if possible. He had learned that his suggestion was carried out and that, after the induction of labor, the kidney condition made a rapid improvement, no operation being necessary.

He had given considerable attention to the relationship of the pregnant uterus to the ureters in connection with the subject of eclampsia. Halbertsma first stated that the pressure of the pregnant uterus was a causal factor, while Ries, in Strasburg, referred especially to the pressure of the fetal head. While it was possible that these factors had something to do with some cases of eclampsia, it seemed to the speaker that Dr. Fry's criticism was quite justifiable, namely, that except very late in pregnancy it was difficult to understand how the fetal head or uterus could exert deleterious pressure upon the ureter.

DR. HIRAM N. VINEBERG, of New York, said that three or four years ago a young woman in perfect health, pregnant about four months, was taken ill with obscure symptoms of indigestion. The urine was examined a short time before, and found normal, but within a few days she had distinct signs of nephritis. She had a small amount of smoky urine, a high percentage of albumin and casts in it. He emptied the uterus, after which the patient's pyelitis began to improve. For months there had been pus in the urine.

In reference to the diagnosis, during the past two years, he had had four cases with obscure symptoms complicating pregnancy at various periods, from the fourth to the eighth month, and in all, excepting one, a diagnosis of appendicitis was made by several consultants, and he in three cases removed practically a normal appendix after various consultations. The patient went on from bad to worse until the uterus was emptied. In all cases there were no urinary complications. In one there was a dead fetus, and he thought afterwards the infection might have come from the uterus. The symptoms were those of peritonitis, with pain on the right side, until the uterus was emptied, and then the patients all recovered.

DR. CRAGIN, in closing the discussion, said the views of the Fellows in the main agreed with his.

In reference to Dr. Dickinson's experience in post-partum cases, he had had the same experience. In one, a forceps case, he took a catheter directly from a sterilized package, introduced it into the urethra, with the urethra entirely exposed, and delivered the woman with forceps. This was followed by pyelitis.

In regard to the remarks of Dr. Noble, that water would answer as well as water plus urotropin, one of his cases he treated with water without urotropin. She recovered, but comparing that case with others which had pus in the urine, the pus cleared up more rapidly in those that had urotropin than it did in the one who had been given water alone.

As to Dr. Davis' experience of the left kidney being involved during the puerperium, in one of the speaker's cases in the puer-

perium there was involvement of the left kidney, but the right one was most involved, and required removal. He had had a case, however, in which the left kidney was involved secondarily by urine coming down the ureter into the bladder and extending to the left kidney, but not to a severe degree.

The criticism about the etiology was just. He did not feel in his own mind that he knew the exact etiology. The pressure on the ureter, he thought, was a purely predisposing cause, and that made it a little more vulnerable. That the ureter on the right side was more compressed than the left was proven by autopsies on pregnant women, and simply showed that the right side was a little more vulnerable. This was seen in movable kidney. One did not know exactly why the right kidney was so much more frequently movable than the left.

Relative to the remarks of Dr. Webster, the speaker had a case now in which he was acting as consultant, and in which the question of induction of labor had come up several times. He had decided in the negative in his case, for the reason that he had had cases in which the kidney had to be removed, and they were both cases in the puerperium, in one of which the pyelitis occurred only two days before delivery. In spite of the delivery of one case, the pyelitis became worse, and the woman finally had to have the kidney removed. In the other, the pyelitis began during the puerperium. That being so, he was afraid if he emptied the uterus the woman would have had pyelitis, and as a final process to deal with he would have had to operate on the kidney, thus adding extra shock to the delivery of the woman.

A SECOND CASE OF PUERPERAL ECLAMPSIA SUCCESSFULLY TREATED BY RENAL DECAPSULATION.

DR. GEORGE M. EDEBOHLS, of New York, read a paper on this subject. The first case, reported to the Society a year ago, illustrated the immediate cure, by renal decapsulation, of puerperal convulsions recurring with great and increasing violence after the birth of the child, a period at which the hitherto final resource of forced delivery was, of course, no longer available. In presenting the case, the opinion was advanced that resort to renal decapsulation in the undelivered woman suffering from puerperal eclampsia might obviate the necessity of forced delivery. The case now reported illustrated the correctness of that opinion. Renal decapsulation was performed upon a woman pregnant near term, suffering from puerperal eclampsia and almost complete suppression of urine. The convulsions were arrested, the flow of urine was re-established, and a threatened death from uremia was averted. Two days after all this had been accomplished, labor began spontaneously, and living twins were born. One child died soon after birth. The second child and the mother were in perfect health four and a half months after the termination of pregnancy. Renal decapsulation thus became the rival of forced delivery in cases of puerperal convulsions of renal origin in the undelivered woman.

In puerperal convulsions, occurring or recurring after delivery, renal decapsulation constituted the final resort when all other measures had failed.

DR. HENRY D. FRY said that under proper supervision and care puerperal eclampsia ought not to occur in obstetric practice. If the case under discussion had received proper supervision, it would not have reached the stage where Dr. Edebohls would have been called upon to perform renal decapsulation. It also accentuated the importance of not relying too much upon the amount of albumin, or the presence or absence of it, in threatened abortion. In this case, when there were decided indications of toxemia, there was very little albumin, and later, after the toxemic condition became much more marked, albumin increased. If examination at that time had been made as to the amount of urea and total solids, he was sure it would have demonstrated marked insufficiency of the kidney action, and that in this case, like all such serious ones, that did not yield to proper treatment, the uterus ought to be emptied and the patient prevented from going into the condition of eclampsia.

He was very glad to know of any remedy for these desperate cases which would offer a chance of curing them. In Dr. Edebohls' first case, he did not think that the value of the operation was as well demonstrated as in the second case. In the first case the uterus was emptied very soon afterwards, and before there was much improvement, so that we could not say whether the cure in that case resulted from the uterus having been emptied or from decapsulation of the kidney. These cases improved rapidly as soon as the uterus was emptied, but in the recent case which Dr. Edebohls had reported, it showed very strongly that there might be value in the operation. Considering the second case which Dr. Edebohls had reported, the speaker felt enough confidence in these desperate cases that failed to yield to other methods of treatment to be inclined to do renal decapsulation when a case presented.

DR. HIRAM N. VINEBERG, of New York, asked Dr. Edebohls two questions. First, considering that the capsules in both cases were too large for the kidneys, and there was absolutely no pressure evidence whatever, how he would explain the improvement. Second, Dr. Edebohls told us that there was improvement in the patient's condition in spite of the fact that the kidneys did not act any more freely than they did before, that is, the amount of urine passed during the first thirty-six hours after operation was no more than it was prior to the operation: consequently, the kidney, so far as we knew, did not act any better, but still the patient improved. Might we not account for the improvement in the patient's condition from the fact that she bled freely prior to her delivery? Of course, improvement that occurred after delivery could not be taken as improvement after labor. These cases had been observed to improve and from passing comparatively no

urine, in twenty-four hours after delivery they would pass several ounces of urine, with small quantities of albumin.

DR. EDWIN B. CRAGIN said the result in Dr. Edebohls' case spoke well for the operation. He was going to ask the same question that Dr. Vineberg had asked, namely, whether venesection really did not have as much to do with the improvement in the case as the decapsulation of the kidney. Occasionally one saw marked improvement after venesection, and this was a point to be borne in mind.

He would like to have Dr. Edebohls get cases about six months or seven months advanced in pregnancy, with convulsions, then decapsulate the kidneys, and let the members know what the results were, whether it would enable these women to go to term without any more convulsions, and without any other treatment than renal decapsulation.

The case he (Edebohls) had put on record was remarkable. When a woman had improved so much as this one had before labor, the treatment carried out certainly deserved marked and careful consideration.

DR. ROBERT L. DICKINSON asked Dr. Edebohls whether in these very difficult cases found in tenement houses, handicapped as one would be by insufficient assistants and outfit, any lesser measure, such as free incision of the capsule longitudinally and transversely, would give relief at all commensurate with renal decapsulation.

DR. EDWARD P. DAVIS stated that Dr. Edebohls' cases were extremely interesting, but the second case was less conclusive in favor of the operation than the first, in his opinion, as so many things happened in the second case, and so many things could turn the tide of approaching eclampsia. In the first place, eclampsia being recognized as of toxemic origin, had its natural history. If a patient could be tided over for a short time, labor would come on, and if the uterus was emptied, in a certain number of cases they would recover. Those who died, died from cerebral apoplexy, toxemia, shock, and pneumonia. In this case, while some improvement ensued, still emptying of the uterus, in his judgment, had quite as much to do with it as the operation of decapsulation of the kidney. The capsules of the kidneys were not tight. There was no glaucoma of the kidney, so to speak. In this connection he called attention to a case reported from abroad, where a woman died in eclampsia, and at the autopsy double glaucoma of the kidney was found. The reporter of this case raised the question as to whether Edebohls' operation would have been suitable; yet Dr. Edebohls in his own case had both kidneys loose and no glaucomatous condition.

While the speaker was interested in renal decapsulation, and would not hesitate to perform it if a suitable case presented itself, he felt as Dr. Cragin had said, that had the case reported come under his care, he would not have thought of renal decapsulation; he would have treated the case by stimulating the excretory proc-

esses, and then if necessary to induce labor, emptied the uterus. He had seen in his own experience Cesarean section followed by extraordinary improvement in the excretion of the patient, although the Cesarean section had nothing to do practically with the excretory process, yet the profound anesthetization of the eclamptic woman brought about an improvement in the excretion of urine. So many things obtained in eclampsia at times, that it was questionable which brought about the improvement in Dr. Edebohls' case, venesection or decapsulation of the kidney. Cases such as Dr. Cragin had suggested would be more suitable for a fair test of this operation.

DR. EDEBOHLS, in closing the discussion, said that had he in his paper spoken about the existing methods of treatment of puerperal eclampsia, a great deal of the criticism that had been brought against renal decapsulation would be justly in place. He was not talking about any method of treatment at present in vogue for puerperal eclampsia, but simply trying to add to the resources of the obstetrician another aid in cases in which the resources at present at the command of the profession failed. Inasmuch as the mortality from puerperal eclampsia varied from ten to twenty-five per cent., there was still room for improvement in the treatment of an affection in which such a mortality obtained.

There were a great many questions in connection with this subject which he could not answer at present, and which he did not expect to be able to answer during his lifetime. As to the explanation of the immediate good effects in this case, although no urine was secreted in the next twenty-four hours after renal decapsulation, the patient's condition changed for the better. There was no further cause for anxiety on her account. The venesection was the thing that may have done it, and perhaps it had a great deal to do with the good effect, inasmuch as the woman had lost much blood. The explanation of the immediate good effect of renal decapsulation was not clear; it was still empirical, and experimentation on animals would teach us more about it. The immediate good effects of renal decapsulation might be due in part to the massage of the kidney which necessarily accompanied the operation. Furthermore, the local blood-letting which accompanied the operation had a good effect. These did not obtain, however, in the case narrated, as there was not a drop of blood lost from the kidney. The explanation of the good effects could not be ascribed in this case to the relief of renal tension. The capsule was loose and pinched up in high folds. In the majority of cases of chronic Bright's disease which he had operated upon, there had been no such tension of the capsule encountered. He had encountered it in acute hemorrhagic nephritis following infection, where the kidney was immensely swollen and the capsule stretched over it.

With regard to the remarks of Dr. Cragin, in which he asked for a patient, seven months' pregnant, with eclampsia, on whom to perform renal decapsulation, with a view to enabling her preg-

nancy to go to term, he would say that this was just the sort of case he would like to have. Unfortunately, his obstetrical practice and facilities were limited; in fact, this was the only case of puerperal eclampsia he had seen since the last meeting.

As to the question raised by Dr. Dickinson, the operation was done in a tenement house, and whether other operations upon the kidney than decapsulation would give the same results, he did not know, but he was inclined to think they would.

As to the remarks of Dr. Davis, who spoke of several other things which might have had something to do with the improvement in the case, mentioning among them the anesthetic, he would say that this woman had been anesthetized two or three times, without any good influence upon her eclampsia.

SYMPOSIUM ON THE TREATMENT OF RECENT INJURIES TO THE GENITAL CANAL.

DR. EDWARD P. DAVIS, of Philadelphia, read the first paper, entitled

PRIMARY REPAIR OF LACERATIONS OF THE CERVIX UTERI.¹

DR. ROBERT L. DICKINSON, of Brooklyn, N. Y., followed with a paper entitled

THE PRACTICE OF CERVIX REPAIR FIVE DAYS AFTER DELIVERY.

No complicated or considerable perineal injury should be repaired at the close of labor, but three to five days later. This had an important bearing on lacerations of the cervix, as this was the ideal time to restore such injuries. The huge edema, the bruising and the uncouth distortion of the vaginal portion just after delivery, rendered identification of the parts that should be brought together impossible, and attempt to accurately coapt, guess-work. Therefore, whenever feasible, the cervix should be sewed on the fifth day. The frozen sections of the puerperal weeks showed that then, and not until then, shrinkage had occurred. Bleeding no longer obscured the difference between flayed surface and torn structure. Then only were the surroundings of the operation, in the way of illumination, table, time, and a rested personnel possible. This applied particularly to private practice.

The conditions under which the cervix should be repaired at the close of labor were these: (1) Bleeding from a firmly contracted uterus, notwithstanding ergot, heat, holding, and tampon. Here there was a spurting artery. (2) When the cervix injuries were clean cuts, of known location, as after Dührssen incisions. (3) When, in the immediate repair of a moderate perineal injury, a tear of the cervix was found.

The conditions under which the cervix should be repaired several days after labor were these: (1) Exhaustion of patient, or surroundings and conditions that precluded careful work. (2) Extensive injuries, except when these persistently bleed, or have

¹See original article, September issue.

been cut by the surgeon. (3) When accompanied by complicated or considerable injuries to the pelvic floor.

The writer drew attention further to the alterations produced by granulation and contraction in these wounds when left alone, so that the scarred, swollen, everted or cystic cervix months or years after injury gave uncertain indications for accurate restoration to the original condition.

GENERAL CONSIDERATIONS OF LACERATION OF THE CERVIX UTERI.

DR. J. M. BALDY, of Philadelphia, stated that as a matter of clinical fact, let the cervix uteri be torn deeply, and if the parts were preserved from infection, the greater part of the wound would heal spontaneously, and the rest of it would remain perfectly healthy. The lips would remain uninfiltated, of normal size and thickness, with no eversion and no erosion of the lining mucous membrane. In such a case, there would be no untoward symptoms, and no bad effects whatever. There was a tendency among obstetricians to repair these lacerations primarily. The objections to such practice were manifold, and these objections the author pointed out. Whatever might be ideal surgery under the exigencies of actual practice, the treatment for recent lacerations of the cervix remained, and he believed would remain, namely, rigid local cleanliness, excepting where there was sufficient hemorrhage to demand a ligature. There was one belief prevalent which would warrant, nay, demand, a repair of every lacerated cervix—the belief that lacerations of the cervix produced carcinoma. In this belief he took no part, and no one had, to his knowledge, as yet brought forward a scientific fact which would uphold such a theory. In twenty years' work he had not seen a single case of cancer develop in a laceration of the cervix which he had refused to repair.

DR. HENRY T. BYFORD, of Chicago, said he did not see any good reason for leaving a laceration of the cervix for five days. When the cervical tissues were not bruised too much, it was good surgery to close a laceration as soon as possible. He had found hardened catgut efficient.

DR. LAPHORN SMITH thought we should do all in our power to prevent lacerations of the cervix, and, when they occurred, repair them as quickly as possible. The difficulty mentioned that the general practitioner was not prepared to repair them immediately did not hold good, for the reason that most practitioners knew when a laceration was produced. The mere fact that the parts were exposed to constant friction was sufficient reason for repairing a lacerated cervix.

DR. EDWIN B. CRAGIN confessed that he was afraid to teach students, men who were not thoroughly trained, to repair every laceration of the cervix. Where there was a severe laceration extending up into the canal, so that there was hemorrhage from it, it should be repaired, and he felt that in the conditions outlined by Dr. Dickinson for immediate repair, these repairs should

be carried out where there was marked hemorrhage, where there were clean-cut incisions in the cervix, and if one had the patient under the influence of an anesthetic, and was repairing the perineum, he should have the cervix plainly in view. In these conditions immediate repair was the proper thing to do, but to teach students that every cervix that is torn should be repaired would be bad practice, and he thought more lives would be lost in the puerperium than were now lost from infection, on account of the fact that in all probability the cervix would be sewed too tightly, drainage would be thereby insufficient, and a great many of the women would die.

DR. A. PALMER DUDLEY, of New York, discussed the technique of immediate repair of lacerations of the cervix. He agreed with the speakers that it was unwise to advise undergraduates to do the immediate operation unless their teacher at the same time showed them how to do the work. According to his way of thinking, it was pernicious teaching to advocate the repair of these lacerations five days after their occurrence. He thought they should be repaired immediately.

DR. J. CLIFTON EDGAR, of New York, said he would be very loth to teach undergraduates immediate repair of cervical lacerations. As to sewing up a lacerated cervix in the presence of hemorrhage, he did not think a laceration of the pelvic floor could be compared with one of the cervix, as far as subsequent trouble and inconvenience to the patient were concerned.

DR. HENRY C. COE, of New York, stated that in some of his cases he had only operated on the cervix after a severe instrumental delivery, and in most of them in which he had hemorrhage, it was controlled at once to save the patient's life. The fact that operations for lacerated cervixes had been followed by such good results, had led him to think that the immediate operation could be properly performed as well as one subsequently; but the practitioner should not forget the restrictions, and when these operations were done, they should be done in a proper way.

He accepted Dr. Baldy's challenge that epithelioma could not develop from hypertrophied glands incident to a lacerated cervix. In such cases he thought we should either let the cervix alone or amputate it. It was considered to be a prophylactic operation against carcinoma.

DR. J. WHITRIDGE WILLIAMS, of Baltimore, expressed the hope that the Society would not go on record as advocating the immediate repair of cervical tears. For his part, he did not believe we had any indication for repairing a freshly lacerated cervix except when there was severe hemorrhage. In regard to repairing these tears immediately after confinement, one had to introduce his hands into the genital tract after the expulsion of the placenta, thereby markedly increasing the danger of infection, and the idea should be to touch the lying-in woman as little as possible. A freshly lacerated cervix should only be repaired when it was de-

manded, and the only condition in which it was urgently demanded was when there was severe hemorrhage.

In regard to postponing operation for six days, he could see no good reason for doing it. If the laceration did not give rise to hemorrhage during the first five days, much better results could be obtained if it was attended to later.

DR. HERMAN J. BOLDT, of New York, said the question of immediate repair of lacerated cervixes was largely a matter of personal opinion. Some sixteen years ago he read a paper in which he stated that the practitioner should wait until the puerperal period had passed, then examine the woman, and if it was necessary to do any work on the lacerated cervix, it was the proper time to do it. It could be done without any cutting by denuding the surface with a sharp scalpel and introducing catgut sutures. He did not remember a single instance during a period of eighteen years in which he had seen a failure, and the results had been invariably good. His views from that time had been more or less modified. To recapitulate: One should wait until the puerperal period had passed, say two or three weeks, then an operation might be done, catgut could be used, and one would have practically a perfect condition of the parts subsequent to operation.

DR. SETH C. GORDON, of Portland, Maine, could not agree with Dr. Baldy that these lacerations were not foci of cancer. He believed the clinical history of cancer would scarcely bear out Dr. Baldy in the statements he had made. In the speaker's whole experience he had not seen a case of cancer of the cervix uteri in a nulliparous woman. However, he believed that it was undoubtedly a source of malignant disease if the laceration was left unrepaired. Free drainage in these cases, dilatation and curetting, would oftentimes do more for them than attempts to repair slight cervical lacerations.

(To be continued.)

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting of March 18, 1904.

DR. I. S. STONE presented a specimen which represented a
CAST OF THE UTERUS AFTER APPLICATION OF ZINC CHLORIDE.

Mrs. W., age 68, had been having uterine hemorrhage for several months past, and had been treated by both the Röntgen ray and radium methods without benefit. When first seen by the reporter on February 10, 1904, the uterus was found rather larger than normal; was freely movable and there were no signs whatever of extension of the morbid process beyond the uterus itself. The cervix appeared to be of nearly normal size except for the presence of a slough from the application of radium. Dr. Stone's diagnosis was cancer of the body of the uterus, and he supposed this was what her former physician thought. On February 12 the patient came to Columbia Hospital and on the 13th the uterus was curetted and a saturated solution of zinc chloride applied to the entire interior of the organ. The patient had some annoyance from the excoriation of the vagina but had no severe or dangerous symptoms whatever, and passed the cast here shown on the 8th day. Since this time she had been quite comfortable. When seen a week since, the uterine sound barely passed into the uterus and the vaginal wall had become adherent to the cervix on its posterior surface. The pathologist of the hospital pronounced the disease "Fungoid or Polypoid Degeneration of the Endometrium." Dr. Stone did not propose a hysterectomy in this case because of her age and the condition of her heart.

DR. J. T. JOHNSON thought the case was possibly not one of cancer. In treating cancer of the uterus he has not used zinc chloride but uses the cautery largely. He asked Dr. Stone if he thought the zinc chloride treatment was feasible in cancer of the body of the uterus. He thinks there is considerable danger in perforating the uterus by its use, especially after a preliminary vigorous curettage. He regards hysterectomy for cancer as so dangerous an operation and attended by such poor results that he will welcome any less dangerous treatment which gives good results. He does not attempt a hysterectomy unless there is good hope of a permanent cure. Cautery operations, especially Byrne's, give good results.

DR. MILLER asked Dr. Stone if there had been any evidence of recurrence of the disease, hemorrhage, etc., since the operation. He thinks the results of hysterectomy depend largely upon the technique of the operation. While most American gynecologists

claim to have a very small percentage of cures after hysterectomy for cancer of the uterus some German operators claim much better results. Wertheim, who does the abdominal operation, in 120 cases who presented themselves operated on 40 per cent. He had a large primary mortality but after a lapse of 2 years 77 per cent. of those recovering from the operation were free from recurrences. Olshausen with the vaginal operation, in 671 cases who came to him operated on between 30 per cent. or 40 per cent. His primary mortality was 6 per cent., and after 2 years 74 per cent. were free from recurrences; after 5 years 38 per cent. were free from a return. Wertheim and Krönig both operate upon a larger percentage of their cases and have a smaller primary mortality, as they have perfected their technique. He thought that perhaps Dr. Stone's were not cancer at all.

DR. JOHNSON stated that many operators agree that most women would live longer if not operated upon.

DR. BALLOCK asked if at times hysterectomy is not justifiable as a palliative procedure. The woman is rendered more comfortable by it.

DR. CARR thought that most women were more comfortable without operation. They can be rendered comfortable and hemorrhage controlled by the use of very small doses of morphine. He begins with $\frac{1}{32}$ gr. morphine every 2-3 hours. These small doses do not cause nausea and constipation even when it becomes necessary to gradually increase the amount to 10-15 gr. a day. He cited a case of a woman who lived several years under this treatment whom he did not think when he first saw her could live more than a few weeks.

DR. STONE in replying stated that there has been no report of a recurrence of the hemorrhage in his case. He thinks the entire uterine mucosa was destroyed. Certain cases should be operated upon, but many more should not. He does not now do more than two or three hysterectomies for cancer in a year.

DR. KELLEY read the paper of the evening,

ABSCESS OF THE LIVER AND OF THE LUNG AFTER APPENDICITIS.¹

DR. STONE.—The subject was one whose importance could not be over-estimated. The complications which have come to light within the last few years showed how serious a disease appendicitis is. Dr. Kelley's first case was hardly typical because the patient went through so many phases of disease and recovered. The second case was typical. Chills, and repetition of chills, were very significant facts with regard to post peritoneal infection in appendicitis. Cultures would probably have shown that the first cavity opened was an abscess. The case undoubtedly was one of pylephlebitis. He had recently reported a number of cases of retroperitoneal infection in appendicitis and the only cases which he had had die from appendicitis had belonged to this group. Dr. Cook had recently reported a case of liver abscess which was due

¹See original article, page 209.

to appendicitis. When chills occurred with an apparently mild case of appendicitis it was usually not due to peritonitis, but to a retroperitoneal infection. At the operation in a case of this kind one should look behind the peritoneum. He did this in a case one year ago and found pus behind the ascending colon which might easily have been overlooked.

DR. COOK said that the case which he had reported at the Medical Society was one of pylephlebitis following appendicitis. The symptoms were obscure and a diagnosis of liver abscess was made. At the operation nothing was found in the liver. The patient died 2-3 weeks later from a general pylephlebitis.

DR. LEWIS said that he had had several cases of appendicitis that would probably have gone on to a general infection if they had not been operated upon. In a case which he operated upon last summer in a boy of 12 years of age he found a cavity containing a half pint of pus behind the cecum. He was compelled to open the abdomen again for an extension of the pelvic abscess and the patient finally died of intestinal obstruction.

DR. CARR said that he was the first man in Washington to break up all adhesions in cases of appendicitis and he saved many cases, he thought, by this procedure. If we clean out the abscess we can remove the walls without much danger of a general peritonitis. He had found pockets of pus under the liver and on the left side of the abdomen which would have escaped observation if he had not broken down the adhesions. Thrombosis of the mesenteric veins is the most serious complication of appendicitis. Abscess of the liver is one of the more common sequelæ. Many cases come on a long time after the attack. In one of his cases the liver abscess developed 3 months after the appendicitis. He found a pint of pus in the back of the right lobe of the liver. The tip of the appendix was adherent to the liver. The patient developed another abscess which opened into the lung, and finally died.

DR. ACKER congratulated Dr. Kelley upon the result in his first case. He had seen the case. There was no doubt as to the abscess, but he was not certain as to whether it was in the lung or in the pleural cavity. He cited the case of a boy with perityphlitis where the abscess penetrated the right pleura and involved the pericardium and caused death.

DR. WHITE mentioned a case where the diagnosis of appendicitis had been made. The appendix was absent and the case proved to be one of typhoid fever. He had seen one other case of congenital absence of the appendix.

DR. CARR said he has seen three cases of congenital absence of the appendix. He mentioned a case where there was a mild appendicitis in a boy of 10 years of age. The case did nicely for a few days and finally developed cerebral symptoms. He thought it to be tuberculous meningitis.

DR. STONE said many appendices which appear to be absent really lie behind the bowel. One has to open the mesentery to

find them. Dr. Carr stated that in three of his cases no appendix was found at autopsy even after a most careful search.

DR. COOK asked Dr. Carr how many cases of appendicitis he had operated upon. The fact that in 3 of his cases where a diagnosis of appendicitis had been made there was no appendix seemed to make the diagnosis very doubtful.

DR. CARR had had 101 cases of appendicitis. In the cases where the mistake in diagnosis had been made there was a condition in each warranting the operation.

DR. KELLEY in reply stated that his first case still has her appendix. Dr. Thompson operated upon her first thinking it was a liver abscess. Later he opened and drained the appendiceal abscess, but did not remove the appendix.

Meeting of April 1, 1904.

The President, J. W. BOVÉE, M.D., in the Chair.

DR. FRY presented several specimens.

SEPTIC UTERUS.

A woman had been delivered at full term 6 days before he saw her. She was septic, had a quick pulse and a high temperature, 105.8° F. There was a laceration of the cervix and perineum, and a foul discharge which contained streptococci. The lacerations were cauterized, she was given strychnine, whiskey and anti-streptococcus serum. Uterine douches were also used. No operation was advised as she had peritonitis and pleurisy. She died in two weeks. The autopsy showed pus in the uterine walls, in the broad ligaments and ovaries. There was also peritonitis, the Fallopian tubes were not occluded and the endometrium showed no marked lesions.

FIBROID UTERUS.

The woman suffered with severe pain in the abdomen for several weeks. She had borne two children and there had been a third pregnancy for which an operation had been done. The statement was made by the patient that the fetus at the fifth month had lain between the womb and ovary. The examination showed an anteflexed uterus but was unsatisfactory on account of pain. The examination under anesthesia showed a uterus slightly enlarged, and behind, a sulcus could be made out. A probe passed into the cavity could be felt to enter the posterior mass, which showed the condition to be a fibroid of the anterior uterine wall. The myoma was the size and shape of the fundus. On opening the abdomen the omentum and intestines were adherent and the left appendages were absent.

CESAREAN SECTION AND HYSTERECTOMY AT THE 7TH MONTH OF GESTATION.

The patient was at the Columbia Hospital and he had intended to delay operation until the child was viable but labor set in and the woman was in such a bad condition that an immediate operation was decided upon after consultation with the staff. The pelvis was blocked by a large fibroid tumor which pushed the cervix almost out of reach of the examining finger. The tumor which lay in the cul-de-sac was lifted up after Cesarean section and with the uterus was removed. The child died within 24 hours and the mother made a good recovery.

DR. JOSEPH TABER JOHNSON presented a

VERMIFORM APPENDIX

which had been removed from a patient upon whom a salpingo-oophorectomy had been done one year before. Since the first operation she had suffered with a "burning" in the right lower abdomen and was anxious that the uterus should be removed, which was done. The pain was probably due to the appendix which was adherent to the stump of the uterus where there was a silk ligature. It is an illustration of the damage which may result from the use of non-absorbable ligatures. He has used silk ligatures generally and has contended that less trouble resulted from silk than catgut. More cases of hemorrhage have resulted from catgut by its slipping than from silk.

DR. FRY said that the case brought out two points: (1) That the appendix should be removed when the abdomen was opened unless the condition of the woman forbade it. (2) That we should give up the use of silk for buried sutures and ligatures. Silk can be sterilized and reinfected before being placed in the tissues. He has never had a hemorrhage from the use of absorbable ligatures. If properly used there is no danger of hemorrhage.

DR. STONE read the essay of the evening.

THE RESULTS OF SUSPENSIO UTERI IN WASHINGTON, D. C.¹

DR. J. T. JOHNSON said that he was gratified that Dr. Stone had taken so much trouble to look up the results of the operation in Washington. His own impression of the operation is that it is a valuable one. He regards it as one of the most successful operations for the purpose for which it is employed as to immediate mortality, as to permanency of cure, and as to pain. There is very little danger immediately and very little interference with pregnancy if it is properly done. It appeals to the patient because none of her organs are removed. Hirst and Penrose both give very remarkable statistics in its favor. Penrose in 320 cases had 20 labors without any dystocia and no abortions. His (Dr.

¹See original article, page 192.

Johnson) only death occurred three days after operation supposedly from ileus. Intestinal obstruction is one of the dangers of the operation. Many of the failures of the operation to relieve symptoms are due to the fact that these are largely due to laceration, endometritis, etc., which are not cured at the same time. The fear as to labor is a bug-a-boo, statistics not showing bad results as regards this. Noble who has written most about the operation found one woman in 42 had difficulty in labor. An equal proportion of women upon whom no operation is done have difficult labors. The reason so small a percentage of women upon whom the operation has been performed become pregnant is that the operation is done for conditions which prevent conception. Many operations are performed upon old maids, widows, and women past the menopause. He believes it the best operation for the conditions for which it is indicated.

DR. FRY wishes to strongly endorse the operation. No operation in his gynecological work has given him so much satisfaction as this. Most of his cases have not been followed up, so that he can not give statistics as to the number of failures; but in his private cases he cannot recall a case where the retroposition has recurred. The permanency of the result will depend much upon the technique of the operation. If one in four failed he would abandon the operation. All of his cases so far as he knows are cured. He has given up largely the use of the pessary. One of the great advantages of the operation is that one opens the abdomen and inspects the other abdominal organs. It is often combined with other operations. Most of the bad results credited to the operation are due to fixation of the uterus and not to suspension at all. He reported a case of Dr. Bowen's where the uterus was fixed and the tubes were ligated with silk ligatures. The woman became pregnant and refused to consider an operation for releasing the fixation. A few cases of intestinal obstruction have been reported and this is the greatest objection to the operation.

DR. JACK has had one case of labor after the operation; there was no dystocia.

DR. SPRIGG has had a limited experience but has seen two failures. The failures are due, he thinks, to the way the sutures are placed. He follows the method of Dr. Fry and places a suture on each side and one in the middle, forming a crescentic ligament.

DR. CARR stated that he has had very little experience with the operation. He has never had to operate for a misplacement except for prolapse and has cured his patients without it—symptomatically at least. The symptoms are generally due to some other condition. Tampons and applications will relieve the symptoms as a rule and keep the uterus in position. He never uses a pessary.

DR. MILLER advocated the operation. He has never seen a death from the operation although in his work with Dr. Kelly and since he has seen several hundred cases. He has seen several labor cases who had had the uterus suspended and there was no

evident interference in any of them. After labor there is perhaps no reason why the uterus should not become retroverted because the ligament is always lengthened by the pregnancy and exerts little influence upon the position of the uterus following labor. He has seen several in whom the abdomen was opened subsequent to labor, and in some the suspending ligament was several inches long. There is, however, certainly no more reason why the uterus in these cases should return to a retroposition than in those not operated on. Every labor case should be examined 2-3 months after labor to see that the uterus is in proper place.

DR. BOVÉE said that he had given up the operation entirely because it is not based upon sound surgical principles. Fastening the fundus against the anterior abdominal walls did not put the uterus in a proper position. The cervix should be held back. He cited a case of his where he fixed the uterus for prolapsus and Edebohls had found the cervix prolapsed afterwards. The pessary does no good during convalescence as the operation draws the uterus high out of the pelvis. For a time he shortened the uterosacral ligaments and attached them low down in the cervix. The latest operation which he has used is the Webster-Balay in addition to shortening the uterosacral ligaments. He believes in rectifying anatomical defects and in establishing new structures.

DR. STONE said that he tried not to assume the attitude of a partisan and had tried to give the consensus of opinion of the Washington medical men. In performing the operation he places his sutures anterior to the fundus of the uterus.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

Meeting of May 4, 1904.

The President, EDWARD MALINS, M.D., in the Chair.

FIBRO-MYOMA UNDERGOING SARCOMATOUS DEGENERATION.

DR. PETER HORROCKS, in exhibiting this specimen, mentioned that the patient was forty-six years of age, and that the operation of abdominal hysterectomy was undertaken owing to rapid growth of the fibroid in association with menorrhagia. He remarked that some authorities still disbelieve in the possibility of sarcomatous change in a fibro-myoma of the uterus. He referred to similar cases published by Doran and Finlay and to another previously published by himself, remarking that there is one significant fact common to all of them; namely, that the tumor was known to have existed for years in the usual state of slow growth, and that it began to grow rapidly shortly before operation or removal.

DR. HANDFIELD-JONES asked how it was possible to decide in the specimen which had just been described, whether the sarcomatous degeneration had begun in the substance of the fibroid, or had started in the endometrium, and in the course of its extension had involved the fibroid. He narrated a case of fibroid of the uterus in which the uterus, after shrinking subsequent to the menopause, again enlarged until it reached the level of the umbilicus. The whole mass was removed by supra-vaginal hysterectomy, and then the uterine cavity was found to be distended by a large mass of sarcoma, which had also involved the old atrophied fibroid. Probably in this case, sarcoma had not originated in the fibroid, but had involved it secondarily.

MR. ALBAN DORAN doubted whether these tumors, said to be "sarcoma" histologically, were clinically malignant. One observer had, in a large series of uterine fibroids, made out malignant elements in 10 per cent. of all the cases, a proportion quite at variance with clinical experience. Mr. Doran suspected that the cells which were large and spindle shaped might be altered plain-muscle cells. Histological elements of that kind when subjected to morbid influences, assumed strange appearances, especially when a number were seen in section, cut longitudinally, transversely and obliquely.

DR. EDEN said that he had been interested in the subject of sarcomatous changes in fibroids for some years. He mentioned two cases of sarcoma attacking uterine fibroids which had come under his own observation. He had no difficulty in accepting the fact that a malignant growth might arise in a benign neoplasm just as easily as in healthy, normal tissues. But the term sarcomatous or malignant "degeneration" as applied to this process was, he thought, an unhappy one, because "degeneration" implied loss of vitality or death of cells, while a malignant new-growth was characterized by extraordinary activity and proliferation of cells. The process was rather the occurrence *de novo* of malignant growth in the tissues of a benign neoplasm.

DR. PETER HORROCKS replied that Dr. Handfield-Jones's case was probably a sarcoma from the beginning because the endometrium appeared to be the starting point. But this was not so in his case. Cases were on record of fibroid polypus with sarcomatous degeneration in it without affecting the pedicle. He had used the term "degeneration," objected to by Dr. Eden, as it was the one usually employed.

HEMATOMA AND HEMATOCELE; A STUDY OF TWO CASES OF EARLY TUBAL PREGNANCY.

This paper was read by MR. ALBAN DORAN.

It is generally taught that hematocele associated with interrupted early tubal gestation demands operation whilst a hematoma or extra-peritoneal hematocele under the same conditions will subside if the patient be kept at rest. Two cases which do not support this teaching are related and discussed at length. In

the first, the patient passed clots over two months after the last period, pelvic pain set in and a swelling could be detected in the right fornix and iliac fossa. A week later a decidua was expelled, then a mass with all the characters of a pelvic hematocele developed and became harder and smaller during prolonged rest. Menstruation was re-established within two months. In the second case the patient was seized with vomiting and pain in the right iliac fossa when a period was due. Four days later uterine hemorrhages set in. A swelling could soon be defined above the pubes; its lower limits formed a convex mass behind the cervix, simulating a hematocele in Douglas's pouch. This swelling steadily increased in size. A month after the beginning of the symptoms a decidua was passed, eleven days later acute internal hemorrhage occurred. The author operated and discovered a very large hematoma containing four pounds of old clot. The uterus, appendages, and pelvic peritoneum were entirely above the clot and formed its capsule. The right tube had burst between the folds of the broad ligament so that a hematoma developed and ultimately leaked into the peritoneal cavity which contained a little recent clot. The uterus and appendages were removed with the clot; the cervix was saved. A show of blood was seen twice within seven months after the operation. The nature of the first case was evident, there was a bleeding tubal mole on the right side and a pelvic hematocele as its consequence. The lower part of the hematocele formed a convex mass in Douglas's pouch. According to Taylor and other authorities this condition rarely ends in spontaneous cure, but Veit, Champneys, Lockyer, and Gossman are of a contrary opinion on the ground of clinical experience, and this case, like several others recently under the author's care was cured by prolonged rest. The author admits, however, that convalescence is usually more rapid when the tubal sac is removed, although operation involves cicatrices and retained ligatures. In the second case it was proved at the operation that there had been originally no hematocele whilst a great quantity of blood escaped between the folds of the broad ligament. The blood had raised up the peritoneum of Douglas's pouch which encapsuled its upper part, as in the case of a large cyst or fibroma of the broad ligament. The convex mass behind the cervix was therefore not in Douglas's pouch, which did not exist, but represented the lower limits of the entirely sub-peritoneal hematoma. The acute symptoms were caused by secondary rupture into the peritoneum. The hematoma was the homologue of the posterior tubo-ligamentary pregnancy of Taylor, but the products of conception had been completely destroyed. The secondary rupture into the peritoneal cavity was the homologue of Taylor's fourth class of tubo-abdominal pregnancies. The author suspects that in other cases a hematoma behind the cervix has been taken for a hematocele in Douglas's pouch. Hence hematoma is probably not so rare a result of interrupted extra-uterine pregnancy, and not so

amenable to expectant treatment as is generally taught, its dangers being underrated. Hematocele is certainly very common and its perils have been apparently overrated. Careful clinical study of these conditions is yet needed.

DR. PETER HORROCKS said that he believed that extra-uterine fetation was much commoner than was supposed, and that many cases recovered without being diagnosed or treated. Moreover, he had seen many cases recover without operation, though occasionally operation became urgently necessary even in cases in which resolution had been going on apparently normally for weeks. He regarded bleeding, severe pain and rise of temperature, either protracted or recurring, and the absence of efficient help within easy call, as important factors in deciding on the necessity for operation. He had failed to discover in Mr. Doran's paper any indication which would serve to diagnose a hematoma, such as the one described from an ordinary hematocele.

DR. CULLINGWORTH said that he had listened to the paper with great interest, for the condition described in Mr. Doran's second case was rare, much rarer than Mr. Doran, in his modesty, had indicated. It was suggested in the paper that hematoma was probably not so rare a result of interrupted extra-uterine pregnancy as had been generally taught, but the only ground for this opinion appeared to be that a case had occurred in Mr. Doran's practice and that he "suspected" that undiagnosed cases had occurred in the practice of others. That was surely not a very logical position to take up. From his (the speaker's) own experience (one in about seventy cases), and from what he had gathered from reading, he must still continue to regard pelvic hematoma as a rare complication of interrupted tubal pregnancy and an extensive hematoma such as Mr. Doran had described as exceedingly rare. With regard to treatment, the cases on record were at present far too few to justify them in formulating any conclusions as to the dangers incurred or any fixed rules as to the line of treatment to be adopted. He gathered that Mr. Doran was unable to give them any help in diagnosing an extensive hematoma from hematocele. Fortunately this was not a matter of much practical importance. The treatment in every case had to be decided on general principles. For instance, Mr. Doran had operated, not because the condition was a hematoma (for he did not know it before operation), but because there was reason to believe that fresh hemorrhages were taking place.

MR. JOHN W. TAYLOR said that he was pleased to find that he was so much in agreement with Mr. Doran, in greater agreement, he thought, than Mr. Doran recognized. It is true that in one sentence in his book (which Mr. Doran quoted), he had said that a broad ligament hematoma due to tubal pregnancy might be absorbed and undergo a natural cure; but this was inserted rather in deference to popular teaching than as the result of personal observation. So far as his own experience went, the only recoveries without operation which he had himself observed were the seven

or eight cases of peri-tubal hematocele, most of which were referred to in his book. He had always held and taught that whereas hematoma, due to other causes than tubal pregnancy, was very generally easily absorbed, a broad ligament pregnancy and hematoma due to broad ligament pregnancy was specially dangerous. In his book, he said "In tubo-abdominal pregnancy, if the patient survive the fourth month and the dangers incidental to the extrusion of the fetus from the tube, she is free from further dangerous complications until the term of pregnancy is near its completion. In the tubo-ligamentary on the other hand, owing to the higher position of the placenta and its liability to detachment from the growth of the pregnancy, the patient is never free from danger, and although many cases of this kind go on to term, secondary rupture and fatal hemorrhage are by no means uncommon or impossible at almost any stage of the development." His opinion regarding the general danger of expectant treatment in tubal pregnancy and the advisability of operation was the result of personal observation and experience. He had a wholesome horror of active placental tissue bottled up within the abdomen and having no channel of exit. In one respect he differed altogether from Mr. Doran, who appeared to think that hematoma might be a rather common result of tubal pregnancy. Mr. Taylor believed that ligamentary invasion with hematoma was always a rather rare result and had been accustomed to consider the proportion as roughly gauged by the ratio of the circumference of the tube to the chink or line of the ligamentary attachment. Dr. Cullingworth had spoken of encapsulation of the hematocele as preceding absorption. Mr. Taylor would like to point out that in some cases it prevented absorption.

DR. AMAND ROUTH related a case of hematoma of broad ligament following tubal rupture, where the extravasated blood had stripped up the retro-uterine peritoneum, but did not cause the formation of a convex tumor as felt per vaginam, but rather a concave hardness like a half-dollar. He had in that case found that the extravasated blood was extremely slow in being absorbed. He thought a distinction should be made between encysted and diffuse hematocele. If the hematocele was diffused, bleeding was probably still going on; and if the severe pain felt in these cases was as high as the umbilicus, it was evidence of extensive hemorrhage into the peritoneal cavity. Such a case needed prompt abdominal section. If the hematocele was encysted, operation was rarely called for, and when done should always be by a free incision per vaginam through Douglas's pouch, a gauze drain being left in the cavity. This operation of posterior colpotomy was only indicated where the hematocele became increasingly tense and bulged downward into the vagina. Even if pyrexia occurred, operation was not called for if there was no evidence of increased tension as shown by vaginal bulging or by increase in size of abdominal tumor.

DR. BLACKER was much interested in the question of the rarity

of a hematoma of the broad ligament. He had met with two examples of this condition. In the first case the abdomen was opened and the blood removed, the patient doing well; while in the second case, that of a patient with a typical history of extra-uterine gestation, admitted into the Great Northern Hospital, he had been able to confirm the disappearance of the tumor at a subsequent operation. At the first operation, June 13, 1902, the left broad ligament was found to be distended to the size of a fetal head by a tumor of softish consistence, evidently blood clot. On the surface of the tumor were a number of large veins and in separating some adhesions, one of these vessels was torn. As the tumor was considered to be an intraligamentary hematoma the abdomen was closed, the hemorrhage which was rather troublesome being finally arrested with an iodoform gauze plug. The patient made a good recovery, and when she left the hospital the tumor was a little smaller. In February, 1904, she returned with a ventral hernia, no doubt due to the use of the gauze plug at the first operation. The abdomen was reopened for the purpose of dealing with the hernia and the tumor on the left side was found to have entirely disappeared. Except for some adhesions the left broad ligament was normal. The case was an interesting proof of the fact that a hematoma of the broad ligament could disappear entirely, leaving behind practically no trace of its existence. He thought that it was necessary to distinguish very carefully between the results to be obtained by expectant treatment in cases of broad ligament gestation in which the fetus was still alive; two entirely different classes of cases and requiring quite different treatment in most instances.

MR. ALBAN DORAN, in reply, observed that hematoma, hematocele or broad ligament tumor, whether right or left, tended to push the uterus upward, forward and toward the middle line when it grew big. A convex mass behind the posterior vaginal fornix was not necessarily in Douglas's pouch. The rarity of hematoma, essentially intraligamentary, and the frequency of Taylor's tubo-ligamentary pregnancy implied that the ovum, when it was forced into the space between the layers of the broad ligament, usually survived and developed. The encysting of blood within intestinal adhesions was common in hematocele, but great coagulability saved patients in cases of diffuse hematocele, the blood in such instances clotting into a ball, lying loose in the peritoneal cavity.

Meeting of June 1, 1904.

The President, EDWARD MALINS, M.D., F.R.C.P., in the Chair.

PRIMARY CARCINOMA OF THE OVARIES.

DR. CUTHBERT LOCKYER showed a specimen of carcinoma of both ovaries removed by operation from a woman 47 years of age. Both Fallopian tubes, though apparently normal, under the

microscope were found to be infiltrated with cancer elements. On this account, Dr. Lockyer suggests that in similar cases the tubes, even though apparently healthy, should be removed along with the ovaries.

MISS THORNE, F.R.C.S.I., described a case in which the left ovary was removed by operation in a patient aged 46, the other at the time of the operation being apparently healthy. The patient died 4 months later, when a deposit was found in the right ovary, the ileum had been implicated by recurrence at the original site of operation, and secondary nodules had formed in the liver.

CANCER OF THE BODY OF THE UTERUS.

DR. HERBERT SPENCER showed the uterus removed by combined vaginal and abdominal hysterectomy from a woman aged 36. Fibroids coexisted in the case. He remarked on the slow growth of the tumor and the fact that the patient still remained free from recurrence $6\frac{1}{4}$ years after the operation.

DR. F. E. TAYLOR adduced the reasons which led him to regard the growth as having originated in a diffuse adeno-myoma of the body of the uterus. The specimen was referred to the Pathological Committee.

FIBROIDS COMPLICATING PREGNANCY.

MR. J. BLAND-SUTTON showed a fibroid uterus and its contents removed by panhysterectomy at the 6th month of pregnancy. An interstitial fibroid occupied the anterior wall near the fundus and a larger fibroid grew from the posterior aspect of the cervix and almost completely occupied the cavity of the true pelvis. Both fibroids show signs of degeneration.

DR. HANDFIELD-JONES remarked on the manner in which fibroids in the cervical area were drawn up and elongated so as to render the passage of an infant possible even in the most unpromising cases. He narrated a case in point.

DR. EDEN, who had seen the patient before the operation was performed by Mr. Bland-Sutton, found one arm of the fetus prolapsed with the hand outside the vulva and a large swelling behind almost filling the pelvis. Moreover, the uterus was firmly retracted. He regarded attempts at version as impracticable and he judged that there was considerable risk of spontaneous rupture of the uterus, if the labor was allowed to continue.

HYDATID DISEASE IN THE PELVIS.

DR. T. W. EDEN recorded a case of primary hydatid disease (echinococcus) of the Fallopian tube in a woman of forty years of age who had been married for thirteen years, had never been pregnant, and presented herself at the Chelsea Hospital for Women in July, 1903, complaining of pain in the back and left side. On examination a small pelvic tumor was found in the pouch of Douglas, which from its position and characters was thought to be a dermoid cyst of the right ovary.

Operation was performed on September 10th, 1903, when the tumor was found to be the distended and densely adherent right Fallopian tube, filled with detached hydatid vesicles. The ovary was quite separate, and unaffected except by adhesions. The tube and ovary of the left side were adherent, but otherwise unaffected. There was no trace of hydatid disease elsewhere. The patient made a good recovery. The naked-eye and microscopic characters of the specimen are then described.

After examination of the literature the author believes that only one other case of primary hydatid disease of the Fallopian tube is on record, viz., that described by Doléris in 1896. With regard to the ovary, he believes that only one case of primary hydatid disease of this organ has been recorded, viz., that described by Péan in 1895. Pelvic hydatids usually begin in the peritoneum or connective tissue.

DR. CULLINGWORTH and MR. CLUTTON contributed a paper giving an account of

HYDATIDS IN VARIOUS PARTS OF THE ABDOMEN.

The case had been under their joint care from time to time during the last eight years. The patient, a young lady, first came under observation in the summer of 1896 when 24 years of age, with a rounded, flexed, fluctuating swelling in the suprapubic region, which was thought to be a cystic tumor of the ovary or of the broad ligament. At the operation there were found hydatid cysts of both ovaries and of the right broad ligament and, in addition to those, hydatid cysts of the omentum, mesentery and anterior abdominal wall. A larger cyst was also observed in the right loin and a second one beneath the lower end of the sternum. The cysts connected with the ovaries and the broad ligament and as many as possible of the omental cysts were removed. The operation lasted two hours and a half and the patient's condition towards the end became extremely alarming. Three months later, in October, 1896, Mr. Clutton made an incision above the umbilicus with a view to dealing with the remaining cysts. He found three large and several smaller cysts attached to the liver. All except two were removed entire; the ecto-cystic walls of the two largest were reduced in size and attached to the abdominal incision. The shock of the operation was extreme. Another large cyst felt towards the spleen had to be left for a subsequent operation. In November of the same year a large cyst in the left iliac fossa was evacuated and a week later a suppurating hydatid cyst discharged its contents per rectum. Between this time and December, 1903, the patient was operated upon on eight different occasions at varying intervals, the longest interval being two years. Once, the operation consisted in evacuation of a large hydatid cyst in the pelvis by means of an incision through the vaginal roof. The other severe operations were performed through the anterior abdominal wall, several of them without opening the peritoneal cavity. The various operations were briefly

described. The authors could not of course say that the patient would have no further development of hydatid cysts, but as the case had now extended over a period of eight years, they thought the present a good opportunity to place on record the history of the case up to the present.

THE PRESIDENT said that in the case narrated by Dr. Cullingworth it was difficult which to admire most—the persistence of the surgeons, or the fortitude and endurance of the patient. The success ultimately attained justified the repetition of the operation and the wisdom in dealing with the recurrences. He had seen one case of hydatid in the pelvis, where a cyst some $3\frac{1}{2}$ inches by 2 was taken from the side of the uterus and front of the right broad ligament. From its intimate connection with subjacent structures it bore out the opinion of Mr. Bland-Sutton that these cysts originated in the subserous tissue. There was no evidence of hydatids elsewhere in the body: in this instance it was a single cyst, isolated in the situation found, and possessing all the characters of echinococcus growth.

MR. CLUTTON, rising at the invitation of the President, said that the patient owed her present satisfactory condition to the fact that, contrary to the usual experience, the development of hydatid cysts had, in her case, been hitherto limited to the abdomen. Had the disease affected the thorax or the brain, as so often happened, the result might have been very different. He could not withhold from the patient herself a tribute of admiration for the cheerful courage with which she had faced operation time after time. With regard to the question of pelvic hydatids, he could not, speaking as a general surgeon, see any reason for supposing that hydatids in the pelvis differed from hydatids in other parts or that anything was likely to be gained by considering them separately.

MR. BLAND-SUTTON expressed his interest in the papers, and observed that some years ago he had taken great pains to verify the references, and to study records relating to primary echinococcus colonies of the ovary. He found them unreliable, and ventured to suggest that Dr. Cullingworth's specimen should be re-examined to determine whether the colony really arose in the ovary, or in the connective tissue of the broad ligament, and as it increased in size flattened the ovary over its periphery. He had recorded a case of this kind. It would also be found that if the distribution of echinococcus colonies among the abdominal viscera was critically examined it would be seen that, in the great majority of instances, the parasite really selected the subserous tissue. This is true of the kidney (where they flourish in the connective tissue of the renal sinus), the bowel, the broad ligament, omentum, rectum, etc. The immunity of the ovary depends on the fact that it lacks a loose serous investment and this is also true of the testis, which seems equally immune with the ovary to these parasites. The loose connective tissue of the mesosalpinx and the adjacent portion of the broad ligament form admirable

environments for the maturation of the six-hooked embryo of *Tænia echinococcus* but is not quite so accessible as the loose connective tissue of the meso-colon, the meso-rectum or the omentum. The multiplicity of lesions depends on the number of ova swallowed (the extraordinary number of cysts in some patients would suggest the probability that occasionally an entire proglottis had been ingested); and the cysts and colonies give rise to clinical signs according to the rate at which they grow, and this varies with the favorable nature of their position and the character of the tissue. It seems also certain that the brood-cysts may be sown into the connective tissue of the wounds made for their removal, a view supported by the frequency with which *echinococcus* cysts grew in the cicatrices of operation wounds made for the removal of primary colonies. Of this Mr. Bland-Sutton had observed several cases in his own practice.

DR. F. E. TAYLOR described the characteristic appearance of the cyst with its laminated membrane and secondary brood-capsules and of the fluid in which circles of hooklets abounded in the case recorded by Dr. Eden. The situation of the cyst in the anti-mesosalpingeal border of the tube independent of the tube lumen lends support to the view expressed by Mr. Bland-Sutton.

DR. CULLINGWORTH, in reply to Mr. Bland-Sutton, said that now that his attention had been called to the cyst exhibited not being actually ovarian, but having the ovary stretched over it, he would take steps to have a further examination made and append a note of the result to his paper.

REVIEWS.

A TEXT-BOOK OF PRACTICAL GYNECOLOGY. By D. TOD GILLIAM, M.D., Professor of Gynecology at Starling Medical College, Columbus, Ohio; Gynecologist to St. Anthony and St. Francis Hospitals, Columbus, Ohio; Fellow of the American Association of Obstetricians and Gynecologists, etc.; pp. 634; 350 illustrations in text and 8 plates. F. A. Davis Co., 1903.

This work is a clear and practical guide for the general practitioner. Its teaching is plain; citations of authorities and literary references are dispensed with. For the convenience of students the text is divided into fifty chapters to correspond to the number of lectures usually allotted to the subject during a college term. These chapters include beside the matter pertaining strictly to gynecology, the diseases of the urethra and bladder, the ureters, the surgical diseases of the kidneys, and diseases of the rectum. The type is good and the illustrations well selected, but the paper is so smoothly coated that its gloss is decidedly disagreeable to the eye in reading.

THE CLINICAL STUDY OF BLOOD-PRESSURE. A Guide to the Use of the Sphygmomanometer in Medical, Surgical, and Obstet-

rical Practice, with a Summary of the Experimental and Clinical Facts Relating to the Blood-pressure in Health and in Disease. By THEODORE C. JANEWAY, M.D., Lecturer on Medical Diagnosis, University and Bellevue Hospital Medical College, and Visiting Physician to City Hospital, New York City. Pp. 300, with 75 illustrations in the text. New York and London: D. Appleton & Co., 1904.

The writer brings together a large amount of information upon the subject of blood-pressure, its variations and measurement. The work is confined to the study of arterial pressure, and includes a review of the literature and an account of the author's personal experience. For the better understanding of the use of the sphygmomanometer and of the significance of blood-pressure changes he discusses the general features of arterial circulation and the factors which determine blood-pressure. Subsequent chapters describe the various types of instruments employed for indirect measurement of blood-pressure and the principles involved in their action. The necessity for the adoption of a uniform width of armlet of 12 cm., in order to obtain results capable of comparison, is emphasized. The apparatus devised by the author is a portable sphygmomanometer with a folding U tube manometer, a 12 cm. armlet secured by friction buckles, a Politzer bag for the inflating mechanism, and a needle valve for lowering pressure within the apparatus. The writer considers that this instrument overcomes many of the defects of others. It is intended for measuring systolic, and estimating approximately diastolic pressure. For accurate determination of both systolic and diastolic pressure Erlanger's sphygmomanometer is the most accurate.

Turning from the technical to the clinical aspect, the variations in different individuals, and particularly in the same person under different circumstances, are considered. The chief importance of a knowledge of such variations is the necessity for avoiding their causes in taking observations, and for allowing for their occurrence in weighing the results obtained.

An important and interesting chapter is that on Blood-pressure in Disease. In this are discussed the natural and artificial causes of high and low pressure, and the value of blood-pressure as a guide to the functional ability of the heart and the adequacy of the circulation. There is shown the value of recognizing "the necessity for attacking the circulation through the vaso-motor system when this is at fault, and thus protect the heart from secondary damage, and needless or harmful stimulation." Some of the practical applications are seen in the chapter on Diseases of the Heart, Arteries and Kidneys. In this the author says that by routine blood-pressure determinations hypertension will certainly be detected, and while this is not pathognomonic of contracted kidney, a systolic pressure of over 200 mm. demands that this diagnosis must be disproved by repeated examinations before it is abandoned. A gradually increasing pressure which resists

treatment is of bad significance when there are any symptoms of cardiac insufficiency, because it increases the work of the over-taxed left ventricle. Extreme hypertension makes one fear rupture of a cerebral vessel. Arterio-sclerosis of the larger superficial vessels has no influence on blood-pressure. High pressure argues involvement of the small arteries. Cerebral arterial disease cannot be diagnosticated from general blood-pressure. The sudden development of rising pressure may indicate the onset of acute uremia.

The remainder of the book is chiefly devoted to blood-pressure in various medical and surgical conditions. Among the latter the most important are collapse and shock. The obstetrical use of the sphygmomanometer is practically an untrodden field. Absolute hypertension does not exist during normal pregnancy. The greatest importance attaches to the arterial pressure as a means of foretelling, and in consequence forestalling, an eclamptic seizure. For this reason its determination during pregnancy is advocated as a routine procedure. As a measure of shock in obstetrical operations it has the same value as in surgical.

The author has done a laborious and useful piece of work of compilation and research and done it creditably. The subject has been placed before the profession in a way to encourage and facilitate its further study and development. The literature is collected at the end of each chapter. H. D.

A GUIDE TO THE CLINICAL EXAMINATION OF THE BLOOD FOR DIAGNOSTIC PURPOSES. By RICHARD C. CABOT, M.D. Pp. 549, with colored plates and engravings. Fifth Revised Edition. New York: William Wood & Co., 1904.

Since the first edition, in 1897, when Cabot's pioneer work on blood examination appeared, it has grown from four hundred to five hundred and fifty pages. As in former editions much of this space is accounted for by the inclusion of tables of blood examinations; and in a subject which is still so hypothetical in many ways a large proportion of the subject matter still consists of quotations and abstracts of the work of individual observers. The chief additions in the present volume are the advances due to the employment of the Romanowsky staining method. Wright's modification is that which has been chiefly employed and which is recommended by the author. A number of plates from blood smears stained by this method are inserted. Blood parasites also receive increased attention.

BRIEF OF CURRENT LITERATURE.

DISEASES OF CHILDREN.

Lobar Pneumonia in Children.--Bertram Abrahams (*British Journal of Children's Diseases*, April, 1904) says that lobar pneumonia is quite a common affection from the age of two upwards.

The seasonable incidence of lobar pneumonia in children reaches its maximum in the spring, but does not show so definite and well marked a curve as is found in adults. As with them it attacks chiefly those who are debilitated, but the period of preliminary bronchitis, which is usually so conspicuous in cases of broncho-pneumonia, is absent, the onset being typically sudden. All diseases which commence suddenly in children exhibit a general similarity in their initial symptoms, which are usually nervous or gastro-intestinal, or both. A child attacked by lobar pneumonia may have convulsions with or without vomiting and diarrhea; in such cases the only other symptoms will be high fever and a dry, burning skin. It may be assumed that at this stage physical signs in the lungs will not have developed. The first idea will be that the little patient has scarlet fever, and not until the time for the characteristic rash and sore throat has elapsed can this affection be excluded. Another disease which may be closely simulated at the onset is meningitis. When the disease is established there is usually little difficulty in diagnosis. However, the lobar type is not always strictly adhered to. One finds a patch of consolidation in one or other axilla, or there may be dullness over the whole back of the chest on one side. The dullness is not extreme, the note having rather a ringing tubular character. The apices are frequently affected, they were primarily attacked in eighteen out of sixty-two cases. On auscultation, tubular breathing can always be heard with fine, high-pitched râles. The loud râles resembling the patter of rain on an open umbrella, which are characteristic of broncho-pneumonia are not to be heard in lobar pneumonia. The physical signs in this are usually confined to one patch, unless the disease be bilateral. The random distribution in broncho-pneumonia finds no counterpart. The temperature differs from the irregular fever of broncho-pneumonia, rising abruptly and remaining high till the crisis. Since the prevalence of influenza, lobar pneumonia exhibits an increasing tendency to terminate by lysis. The dyspnea and cyanosis of broncho-pneumonia are absent in lobar pneumonia unless both lungs be simultaneously affected. Cough is not a marked symptom. The principal complications are pleurisy, which is so constant as to be one of the phenomena of the disease, and hyperpyrexia. Pericarditis is more frequent than in adults. Jaundice, nephritis, and meningitis are rarely associated and the same may be said of gangrene of the lung. The chief danger apart from hyperpyrexia is asphyxia, but the prognosis on the whole is exceedingly favorable. Sometimes dullness persists for weeks after the attack has passed away. Empyema is

not an infrequent sequela, and, of course, is a far less grave disease than in adults. As to treatment little can be added to the dictates of common sense. Isolate the child in an airy room and meet the symptoms as they arise. Stimulants are rarely necessary and a mild expectorant, such as a grain of ammonium carbonate occasionally in milk, will relieve the pulmonary discomfort. If both lungs are involved it may be necessary to give oxygen and digitalis. The application of leeches to the precordia may here be of great service. Convalescence is as a rule rapid, and the child is virtually well within a fortnight of the onset.

La Goutte De Lait.—An editorial (*British Journal of Children's Diseases*, April, 1904) says that in France a large number of institutions have been established.

Three essentials have been specified by the French medical authorities for the proper working of a Goutte de Lait: (1) The distribution of sterilized milk; (2) regular weighing of the infants; (3) medical supervision.

Milk is distributed in small bottles, each containing sufficient for a meal, which are packed in Soxhlet's baskets. They use ordinary hospital milk fresh delivered in Paris and sterilized on arrival. Seventy per cent. of the cases coming under the notice of the accoucheurs are breast-fed; 24 per cent. have mixed feeding; and only 6 per cent. are bottle fed. In the Gouttes de Lait, which are installed at all the Children's Dispensaries in the Paris suburbs, the infants, on the contrary, are bottle fed mostly. Pint flasks of milk, which arrive from Normandy and elsewhere commercially sterilized and hermetically sealed with paraffin corks, are favored. The proper quantity of milk for each feed, according to the age and stomach capacity of the infant, is obtained by the use of a properly graduated bottle. In France it is customary to order whole milk at three or four months of age, but prior to that the admixture of a third or fourth part of boiled water and a little sugar is deemed necessary. The addition of sugar of milk is not favored, and commercial humanized milk after Gärtner's plan and American percentage milk mixtures are disliked. The French physicians think that these methods lower the nutritional value of the product and predispose to scurvy.

Under the auspices of the Goutte de Lait the town infant mortality rate was 20.9 per cent. for 1902-3, whereas the average for the five years previous was 28.8 per cent. During the former period the infantile death rate for the Goutte de Lait was 6.7 per cent.

ITEMS.

The American Association of Obstetricians and Gynecologists will hold its seventeenth annual meeting at the Hotel Monticello, St. Louis, on Tuesday, Wednesday, Thursday and Friday, September 13, 14, 15 and 16, 1904. The Hotel Monticello has been

selected for the headquarters of the association, the management of which should be addressed concerning rooms and rates. The following list of papers has been offered: 1. President's address, Walter B. Dorsett, St. Louis. 2. Retrodisplacements as a cause of sterility; report of pregnancies following the Alexander operation, Herman E. Hayd, Buffalo. 3. Title to be announced, J. Henry Carstens, Detroit. 4. Cystadenoma of the pancreas, L. H. Dunning, Indianapolis. 5. Some clinical reasons for advising early operations for fibroid tumors of the uterus, Rufus B. Hall, Cincinnati. 6. Operative treatment for relief of painful menstruation in virgins, W. A. B. Sellman, Baltimore. 7. The relative merits of bag and metal dilatation, of cervical incisions, and of Cesarean section in cases of accouchement forcé, E. Gustav Zinke, Cincinnati. 8. Title to be announced, J. J. Gurney Williams, Philadelphia. 9. Pseudomembranous tubercular peritonitis, H. W. Longyear, Detroit. 10. The treatment of acute perforated gastric ulcer, Henry Howitt, Guelph. 11. Shall we remove all fibroid tumors of the uterus upon diagnosis? Thomas B. Eastman, Indianapolis. 12. Scar of sigmoid mesentery the cause of spastic obstruction of the bowels; with report of three cases, Hugo O. Pantzer, Indianapolis. 13. Surgical treatment of cicatricial atresia of the vagina, Charles G. Cumston, Boston. 14. Title to be announced, John D. S. Davis, Birmingham. 15. The advantage of limiting artificial interference in obstetric practice, A. P. Clarke, Cambridge. 16. Uterine myomas, with specimens, Joseph H. Branham, Baltimore. 17. Use of antistreptococcic serum in septicemia and scarlatina, with case histories, A. G. Hamilton, Springfield, Neb. 18. An unusual case with many of the symptoms of appendicitis, Magnus A. Tate, Cincinnati. 19. Conservation of the natural resistance of the patient in surgical work, Robert T. Morris, New York. 20. Title to be announced, J. E. Sadlier, Poughkeepsie. 21. Skeleton of an ectopic fetus removed by vaginal cystotomy, William D. Haggard, Nashville. 22. Title to be announced, L. S. McMurtry, Louisville. 23. Title to be announced, Charles A. L. Reed, Cincinnati. 24. Infantile intestinal diverticula, J. W. Hyde, Brooklyn. 25. Emergency operations in abdominal surgery with cases, Edwin Ricketts, Cincinnati. 26. No points of safety for retention or gravitation of pathologic products in the pelvis or peritoneal cavity, Joseph Price, Philadelphia.

The Canadian Medical Association will meet at Vancouver, on August 23, 24, 25 and 26, 1904, beginning at 10 A.M. on Tuesday, August 23. Mr. Mayo Robson will deliver an address on Surgery, and Dr. C. E. Dudley on Gynecology. Numerous papers by men from Canada, United States and Great Britain. Address W. D. BRYDENE-JACK, M.D., Local Secretary, concerning accommodations.

THE AMERICAN
JOURNAL OF OBSTETRICS
AND
DISEASES OF WOMEN AND CHILDREN.

VOL. L.

SEPTEMBER, 1904.

No. 3.

ORIGINAL COMMUNICATIONS.

THE ULTIMATE RESULTS OF INDUCED LABOR FOR MINOR
DEGREES OF PELVIC CONTRACTION.¹

BY

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(With three illustrations.)

THE excellent results for mother and child following the elective Cæsarean section for pelvic deformity have induced many operators to unnecessarily perform that operation for the lesser degrees of pelvic contraction. A delayed labor with the history of a previous difficult forceps delivery at term, and even the avoidance of perineal lacerations likely to follow a breech extraction in a first labor with a normal pelvis, have actually been advanced as justifiable indications for Cæsarean section.

Gynecological technique has fought its battles and won its triumphs, and the operation enthusiast, looking for other attractive fields, is now turning his attention to the woman in labor, and it appears that even the abdomen, intended to shield and protect

¹Read before the Obstetrical Society of Philadelphia, June 22, 1904.

its unborn burden, is not to be spared a certain amount of experimental and, I believe, unnecessary surgery. I am aware that the recent writings of most American obstetricians follow those of Continental Europe in condemning the induction of premature labor in the treatment of labor obstructed by pelvic contraction, because of the high fetal mortality, and I am in hearty accord with that teaching, for those degrees of pelvic narrowing which include the absolute indication, viz., a true conjugate of 7.5 cm. or less in generally contracted pelves, and 7 cm. in the flat pelvis. For the lesser degrees of contraction,—conjugates between 10 and 8 cm.,—I am convinced that the skilful induction of labor at the latest permissible period of pregnancy continues to have its legitimate place and should therefore not be relegated to the obstetric garret in order to find more frequent opportunities for the more brilliant and oftentimes spectacular Cæsarean section. The statistics which have induced some of us to formulate our opinions and influence our practice in choosing Cæsarean section for the above mentioned class of cases are always taken from foreign institutions. For example, Kleinwächter (*Die Kunstliche unterbrechung der Schwangerschaft*, III. Aufl., 1902) states that following induced labor for pelvic deformity, only 78.3 per cent. of the children are born alive; that many of them die shortly after birth, and only 60.4 per cent. leave the hospital in good condition. Figures like these have made many obstetricians, especially in this country, abandon the operation of induction of labor for any degrees of pelvic narrowing. Termination of pregnancy at too early a period and the lack of continued care in bringing up prematurely born infants, especially the neglect of breast feeding, must be, and indeed are, important factors in such a poor showing. I would be more willing to be influenced by the opinions of some of our well-known and able men, if their judgment had been determined by their own experience and not by foreign statistics, which must be critically studied in detail before they should influence us. For example, Williams (*"Obstetrics,"* p. 634) states that he has never induced labor for a contracted pelvis, and says that "the children not infrequently succumb to the operation, or when born alive are in so imperfect a state of development that even with the most careful attention hardly more than 50 per cent. survive the first few months."

That statement may be true if applied only to cases in which pregnancy has been interrupted too early and for the major degrees of pelvic deformity. For the minor degrees of deformity

it certainly is not true, and to that extent it is misleading. Reynolds (Trans. Section of Gyn., College of Physicians, Philadelphia, Vol. IV., p. 58) has taken the advanced ground of advising Cæsarean section in multiparæ with any definite pelvic contraction when there is a history of repeated stillbirths during previous operative labors, and for healthy primiparæ with conjugates between 3 and 4 inches (7.5 to 10 cm.) he believes that "the amount of difficulty which will occur should be estimated by observation of the progress of labor; but that the possibility that an indication for the Cesarean section may arise should always be borne in mind in such a case and that all preparations for it should be made beforehand, or at least during the first stage of labor." My experience has taught me that the induction of labor finds its special field of usefulness in almost all of the above enumerated cases which he would prepare for or at once submit to Cæsarean section. The multiparous cases with histories of difficult labors are the very ones that have given me my best results.

At the outset of studying this question and before resorting to a too hasty Cæsarean section, let us not forget the results of Nature's unaided efforts at term. Krönig (*Die Therapie beim Engen Becken*, Leipzig, 1901) and Zweifel have studied a large series of cases in Leipzig and the results in 504 cases of labor in flattened pelvises show that with conjugates between 9.5 and 7 cm. intervention for the contraction alone was required in less than 9 per cent. of the cases; with conjugates between 8.5 and 7 cm. in 16 per cent. for primiparæ and a larger percentage for multiparæ; with conjugates between 9.5 and 8.5 cm., in 2.7 per cent. assistance was required. In 222 cases of generally contracted pelvises with conjugates 10 to 7.5 cm. assistance was required in 9 per cent.; 8.5 to 7.5 cm., in 16 per cent.; 9.5 to 8.5 cm., no assistance was required. Thus is shown the important fact that in 91 per cent. of these 726 cases the labors were considered normal; i.e., they were like a series of the same number of labors in normal pelvises. In 44 of these "normal" cases the children were stillborn. Of the 64 cases requiring assistance because of the contraction of the pelvis, 25 children were saved and 39 were lost, making the total number of children lost 83. Many, perhaps almost all, of those lost in their passage through the conjugates below 8 cm. could doubtless have been saved by Cæsarean section, and I believe it is equally true that almost all of those lost in passing through the conjugates above

8 cm. could have been saved by the induction of premature labor. In more than 2,000 labors under my care at the Preston Retreat there have, of course, been cases of minor contraction successfully delivered at term, having entered the hospital at term and often in labor. In a few instances babies have been lost after difficult operative deliveries. Some of the latter patients subsequently returned for induced labors with success. The cut shows three photographs of a primigravida with a conjugate of 8.5 cm., the pelvis obliquely and generally contracted. The deformity was such as to induce me to abandon the idea of induced labor and



Oblique and generally contracted pelvis, with rachitic lordosis and ankylosis of left hip. Conjugate, 8.5 cm. Spontaneous delivery at term in Trendelenburg-Walcher posture (right leg hanging low; left leg hanging straight and slightly supported).

to permit the patient to go to term, with preparations for Cæsa-rean section after the test of labor. The combined Trendelenburg-Walcher posture, the latter's hanging position of the legs being available only on one side because of the ankylosis of the left hip, secured a spontaneous delivery of a living seven-pound child. This happy termination of a case promising serious obstruction saved the Retreat's record of 2,000 consecutive deliv-

eries without a Cæsarean section and with but one craniotomy and that upon a dead infant, the operation having been performed by my assistant (see Table A, No. 2). The purpose of my paper, therefore, which is founded wholly upon my own experience, is to exploit the usefulness of inducing labor in the *lesser* degrees of contraction *in order to give Nature the little assistance she may need to save the children that without this aid are frequently lost after version or a difficult forceps extraction at term.* When the patient is first seen, too late to induce labor at the most suitable time, it is my practice never to allow such a case to go to or beyond full term, but to terminate pregnancy at once and deliver the case as may seem best after the test of labor. To accomplish the best results after the induction of premature labor the usual causes of failure as far as possible must be eliminated. These are the interruption of pregnancy earlier than the degree of contraction demands and thus to lose the child from unnecessary prematurity, or at a period too late, necessitating a difficult operative delivery which increases the mortality even of children not excessively premature. The successful avoidance of these errors requires the widest experience, the most painstaking study and the keenest "mechanical sense," if I may use that expression, of any obstetric problem and, I believe, is wholly dependent upon an individual's experience and skill. The four factors in this problem, unfortunately, are not equally easy of determination. The size of the pelvis always can be accurately learned. In multiparæ the history of preceding labors points to the individual's expulsive energy of the uterus, but this factor cannot be estimated in primigravidæ, and must be left to the test of actual labor. The determination of the exact duration of pregnancy or its equivalent, the degree of prematurity of the child at the time selected for terminating the pregnancy, is the first and most important difficulty presented. When the cessation of menstruation and the date of quickening are accurately and reliably known, or better still, when, as rarely happens, the probable date of conception is known, the duration of pregnancy can be fairly accurately predicted. The possibility of conception having occurred in the pre-menstrual and not in the usual post-menstrual days, can be a source of error of as much as two or three weeks; and when this factor is in doubt, if the remaining factor, the relative size of the child's head, will permit it, the date selected for inducing labor should err on the side of deferring that date from ten days to two weeks. The methods of determin-

ing the relative size of the head to the pelvis, especially before labor, are unfortunately inaccurate. The direct measurement of the occipito-frontal diameter through the abdominal wall with a specially devised instrument (Perret) and estimating the biparietal diameter as $2\frac{1}{2}$ cm. less, cannot be relied upon. Pinard's table, made from measurements of a large number of fetal heads, showing the biparietal diameters to be $8\frac{1}{4}$ cm. at the thirty-sixth week of gestation, 9 cm. at the thirty-eighth week, and $9\frac{1}{2}$ cm. at the fortieth week, is a useful guide only when the duration of pregnancy is certainly known. Müller's manual engagement of the head by suprapubic pressure and study of the relation of the head to the symphysis, by abdominal and vaginal examination, depends for its accuracy upon individual skill and experience, and is, I believe, the most reliable of all.

My conclusions in all of my cases have been reached after a painstaking study of all these factors and I have placed most reliance upon suprapubic pressure of the head and a reliable history of the menstrual period. In the 30 cases of the appended tables twice my calculations failed me and cost the infants' death. In one case the untrustworthy history and three inches of fat in the abdominal walls misled me; in the other the repeated assurances of a correct menstrual history, which proved to be erroneous with a purpose, was the cause of failure. Both of these cases occurred six years ago, when I had not acquired the judgment which comes with a larger and more varied experience.

As stated above, an operative delivery, version or forceps, after the induction of premature labor, adds a distinct risk to the child and when possible should be avoided. After true labor pains have begun and the cervix has dilated, it is a positive advantage to place the patient in the combined Trendelenburg-Walcher posture. I believe that posture has sometimes avoided the necessity for interference, and when version or forceps has been required those operations have been done with greater ease and greater safety to the infant. This is an important practical point, to be remembered not only for induced labors but for minor degrees of pelvic contraction when first encountered at term.

In order not to terminate pregnancy too soon and lose the infant from prematurity, which is the most frequent cause of the reported high fetal mortality, it is necessary to remember that we have excluded the higher grades of deformity, *i.e.*, contraction in the conjugate below 8 cm. The average infant's biparietal diameter at the thirty-sixth week of pregnancy measures $8\frac{1}{4}$ cm., a

diameter that will usually pass with safety a conjugate of 8 cm. I therefore always defer the operation until the thirty-sixth week and allow pregnancy to continue beyond that date when the conjugate is above 8.5 cm. and when careful estimation of the relative size of head to pelvis will permit it. Reference to Table A will disclose the fact that pregnancy was terminated usually two, and not more than four weeks before the estimated full period of pregnancy, depending, of course, upon the degree of contraction, the estimated size of the head, and upon the history of previous labors in multiparæ and the record of the infants' size at the previous labors.

An objection to induced labor frequently made by those, I am forced to believe, who have had least experience with this operation, is that we have no method which can be relied upon. The wider my experience grows, and I have induced labor for various causes more than a hundred times, the more am I convinced that we have a most satisfactory method in the proper introduction of a bougie, followed by partial dilatation of the cervix if required and then by the insertion of the largest size Vorhees' bag, upon the stem of which more or less continuous traction is made by means of a cord and weight if necessary, to awaken pains and aid in dilatation of the cervix. A study of my cases of induced labor shows that the time required to obtain sufficient dilatation to accomplish spontaneous or artificial delivery has varied from $6\frac{1}{2}$ to 53 hours, the average duration in 18 of my own operations, as shown in Table A, being $29\frac{1}{4}$ hours. Perhaps the most important technical detail of this method is the proper introduction of the bougie. The bougie should be made to pass along the uterine wall at least half way to the fundus and should not be permitted to coil upon itself just within the internal os. That common fault in its introduction can be prevented by passing a stylet, having the curve of a prostatic catheter, into a hollow linen bougie and gradually withdrawing the stylet as the bougie enters the uterus, thus making that portion of the bougie stiff and unyielding that lies in the vagina, while that part in the uterus is flexible; its point by this device is directed upward and toward the uterine wall and thus does not injure the amniotic sac, and as I have demonstrated over and over again, prevents in a great measure the coiling of the bougie within the uterus. Steady traction on the cervix with a double tenaculum to straighten the canal of the lower segment of the uterus is also necessary in most cases. A few whiffs of chloroform in nervous women will often be re-

TABLE A.

	Age.	Gravida.	History of Previous Labors.	Variety of Pelvis.	True Conjugate.	Presentation and Position.	Last Catamenia.	Confinement Expected.
					cm.			
Mary N. No. 1	32	VIII	Five living children. Two stillborn. All labors difficult. Delivered Oct. 26, 1893, at term; high forceps. Infant 7 pounds	Flat rachitic	8.5	L. O. A.	May 28, 1894	Feb. 4, 1895
Annie G. No. 2	28	I		Flat rachitic	8.5	R. O. A.	May 17, 1895	Feb. 14, 1896
Annie D. No. 3	20	I		Flat rachitic	8.75	Breech	June 12, 1895	Mar. 19, 1896
Elizabeth D. No. 4	32	III	First labor, difficult forceps; infant stillborn. Second labor at Retreat; admitted ten days beyond term and in labor; high forceps. Infant died in 48 hours from aspiration pneumonia	Flat	9.5	L. O. A.	Dec. 26, 1895	Oct. 2, 1896
Annie D. No. 5	21	II	First labor induced at Retreat (see above, Case No. 3)	Flat rachitic	8.75	L. O. A.	July 26, 1896	May 2, 1897
Elizabeth A. No. 6	23	II	First labor; infant 6 lbs. 10 ozs.; stillborn; delivery spontaneous at term. Bitemporal 8; biparietal 9½ cm.	Flat	8.5	R. O. A.	Nov. 12, 1896	Aug. 19, 1897
Catherine McL. No. 7	35	IV	First pregnancy; 3 days in labor at term; infant dead; spoon-shaped depression in parietal bone. Second pregnancy; miscarried at third month. Third pregnancy; symphyseotomy at Retreat ten days after term; infant lived one year and died of croup	Flat rachitic	8.	L. O. A.	Jan. 7, 1897	Oct. 14, 1897
Albertina G. No. 8	29	III	Two labors at term; difficult forceps; infants stillborn	Flat	9.	Right shoulder	Feb. 10, 1897	Nov. 17, 1897

TABLE A (continued).

Labor Induced Before Term.	Duration of Labor.		Method of Delivery.	Puerperal Convalescence.	Infant.							Remarks.
	Hrs.				Weight.	Bitemporal.	Biparietal.	Occipito-frontal Circumference.	Condition at Birth.	Condition on Discharge.	Present Condition 1904 (July).	
						cm.	cm.	cm.				
One week	22		Natural	Normal	7 lbs. 2 ozs.	8.	9.	34.	Normal	Normal	Living	
Three days	93		Version followed by craniotomy	Normal	7 lbs.	8.5	9.5	35.	Dead			Admitted Feb. 9. Delivered by assistant, Dr. H. W. Hassell. Occiput posterior after version; chin lock'd above symphysis; infant perished and finally delivered by craniotomy.
Sixteen days	36½		Natural	Normal	7 lbs.	8.	9.25	33.	Dead			Prolapsed cord pulseless when discovered; large spina bifida incompatible with life; length of cord 85 cm.
At term (estimated)	13		Natural	Normal	5 lbs.	7.	7.6	29.	Premature and feeble. Died after 24 hrs.			Patient admitted one month prior to calculated term. Three inches of fat in abdominal wall; infant very small, labor not induced until calculated term had been reached. History of menses and quickening erroneous.
Two weeks	11		Natural	Normal	6 lbs. 12 ozs.	7.	8.5	32.	Normal	Normal	Living	
Two weeks	6½		Natural	Normal	6 lbs. 2 ozs.	7.	8.	31.	Normal	Normal	Living	
Eighteen days	34½		Version	Normal	6 lbs. 3 ozs.	7.	8.	32.	Normal	Normal	Living	
Four weeks	23		Version	Normal	7 lbs. 4 ozs.	8.	8.75	32.	Normal	Normal	Living	

TABLE A (continued).

	Age.	Gravida.	History of Previous Labors.	Variety of Pelvis.	True Conjugate. cm.	Presentation and Position.	Last Catamenia.	Confinement Expected.
Mary L. No. 9.	24	I		Flat	9.	R. O. A.	Sept. 27, 1897	July 4, 1898
Mary McG. No. 10.	39	V	Four labors at term; all difficult forceps; all infants stillborn	Flat	9-25	L. O. A.	Not known	Oct. 9 (estimated from quickening)
Elizabeth A. No. 11.	25	III	See Case No. 6	Flat	8-5	L. O. A.	Dec. 12, 1898	Sept. 19, 1897
Annie D. No. 12.	23	III	See Cases Nos. 3 and 5	Flat rachitic	8-75	Breech	Jan. 10, 1899	Oct. 17, 1899
Catherine McL. No. 13.	39	V	See Case No. 7	Flat rachitic	8.	L. O. A.	June 11, 1899	Mar. 18, 1899
Mary H. No. 14.	33	VI	One miscarriage; two premature stillbirths; two living children (small) after forceps	Flat	8-75	R. O. A.	Sept. 18, 1899	June 25, 1900
Annie D. No. 15.	25	IV	See Cases Nos. 3, 5 and 12	Flat rachitic	8-75	L. O. A.	Sept. 12, 1900	June 19, 1901
Catherine McL. No. 16.	39	VI	See Cases Nos. 7 and 13	Flat rachitic	8.	L. O. A.	Jan. 6, 1901	Oct. 13, 1901
Catherine McL. No. 17.	40	VII	See above Cases Nos. 7, 13 and 16	Flat rachitic	8.	L. O. A.	June 17, 1902	Mar. 24, 1903
Mary O'R. No. 18.	28	II	First labor; difficult forceps. infant stillborn; three doctors in attendance	Flat	9-5	L. O. A.	Oct. 14, 1902	July 21, 1903
Daisy P. No. 19.	31	III	First labor induced by Dr. Dorland; infant living. Second labor induced by Dr. Sprenkel; infant died from omphalorrhagia	Flat	8-5	L. O. A.	Mar., 1903 (Date uncertain; probably in March)	Dec. 28, 1903 (Probable estimation)

TABLE A (continued).

Labor Induced Before Term.	Duration of Labor.		Method of Delivery.	Puerperal Convalescence.	Infant.							Present Condition 1904 (July).	Remarks.
	Hrs.				Weight.	Bitemporal. cm.	Biparietal. cm.	Occipito-frontal Circumference. cm.	Condition at Birth.	Condition on Discharge.			
Three weeks after calculated term	34		Natural	Normal	6 lbs. 4 ozs.	7.	8.75	31.5	Normal	Normal	Living		Admitted June 22 about two weeks before estimated term; relative size of head to pelvis (estimated) permitted pregnancy to continue to July 25, estimated as nearly two weeks prior to full term.
Three weeks	37½		High forceps	Normal	6 lbs. 14 ozs.	8.	9.	32.5	Normal	Dead			Death of infant on fifteenth day from omphalitis. Quickening occurred May 14.
Ten days	53		Natural	Normal	7 lbs. 13 ozs.	7.75	8.75	32.	Normal	Normal	Living		
Two weeks	52½		Breech extraction	Normal	4 lbs. 5 ozs.	7.	8.	29.	Asphyxiated	Dead			Infant died 12 hrs. after birth. Date of last catamenia acknowledged by patient to be an error. Pregnancy terminated at least six weeks before term in consequence of that error.
Three weeks	48		Version	Normal	7 lbs. 1 oz.	8.25	9.25	34.	Normal	Normal	Living		
One week	38		Natural	Normal	6 lbs. 14½ ozs.	8.	9.	32.5	Normal	Normal	Living		
Two weeks	21		Natural	Normal	7 lbs. 6 ozs.	7.5	8.75	32.	Normal	Normal	Living		
Three weeks	29		Version	Normal	6 lbs. 9 ozs.	7.25	8.25	32.5	Normal	Normal	Living		
Eighteen days	31		Natural	Normal	6 lbs.	7.	8.	31.	Normal	Normal	Living		
Nineteen days	26		Natural	Normal	7 lbs.	8.	8.5	32.	Normal	Normal	Living		
Two weeks	9½		Natural	Normal	5 lbs. 8 ozs.	7.5	8.75	31.	Normal	Gaining in weight	Living		Dates of last period and quickening not definitely known. Infant in incubator four weeks.

TABLE B.—PATIENTS IN PRIVATE PRACTICE.

Name and Year.	Gravida.	History of Previous Labors.	Variety of Pelvis.	True Conjugate.	Labor Induced.	Method of Delivery.	Infant.	
							Condition at Birth.	Present Condition.
Mrs. D. 1894 No. 20	I		Simple flat	9 cm.	14 days before term	Forceps	Normal	Living
Mrs. C. 1895 No. 21	II	High forceps; infant stillborn; fracture of skull	Flat, rachitic	8½ cm.	18 days before term	Version	Normal	Living
Mrs. W. 1899 No. 22	I		Simple flat	9½ cm.	14 days before term	Natural	Normal	Living
Mrs. L. 1902 No. 23	I		Justo-minor	10 cm.	At term (calculated)	Forceps	Normal	Living
Mrs. H. 1901 No. 24	I		Flat, rachitic	8½ cm.	15 days before term	Forceps	Normal	Living
Mrs. C. 1902 No. 25	II	Stillborn infant after difficult version at term	Flat, rachitic	9 cm.	At term (calculated)	Version	Normal	Died on third day from sudden intraperitoneal hemorrhage (autopsy)
Mrs. R. 1902 No. 26	I		Simple flat	10 cm.	At term (calculated)	Forceps	Normal	Living
Mrs. S. 1902 No. 27	I		Justo-minor	10 cm.	At term (calculated)	Forceps	Normal	Living
Mrs. M. 1902 No. 28	II	Difficult forceps; pelvis fractured; infant survived and died within a year	Simple flat	9½ cm.	14 days before term	Forceps	Normal	Living
Mrs. H. 1903 No. 29	II	Labor induced three weeks before term; infant living	Flat, rachitic	8½ cm.	14 days before term	Natural	Normal	Living
Mrs. T. 1903 No. 30	III	Two stillborn infants; high forceps	Simple flat	9 cm.	14 days before term	Forceps	Normal	Died on fifth day from aspiration pneumonia

quired to place the folded rubber bag, caught in an appropriate forceps. I consider the immediate introduction of the bag after the bougie has been placed, essential to a reasonably quick onset of labor. In a few cases, where pains have been slow in appearing or when it is desired to have a prompt onset of labor, I have, in addition to the above, distended the vagina with Braun's kolpeurynter and directed the nurse to intermittently make traction, upon its stem. When the Vorhees' bag can, with gentle traction, be drawn through the cervix, an instrumental delivery or version and extraction can be immediately performed, if indicated, as frequently is the case when labor has been induced for kidney or cardiac complications. For pelvic narrowing the Trendelenburg-Walcher posture should be used and the patient's own expulsive efforts first tested for a reasonable length of time.

An analysis of the appended tables shows that in 30 cases of induced labor for the lesser degrees of pelvic contraction there was neither maternal mortality nor morbidity. Twenty-three of the infants are living and well at the present time, some of them nine and ten years of age. Seven infants died. Two were stillborn, one from craniotomy after version, the occiput rotating backward with the chin impacted above the symphysis. This case was delivered at term after the induction of labor by my assistant during my summer vacation, and might have been saved even at term if the backward rotation and impaction had been prevented, as I have always been able to do with similar cases. The conjugate was $8\frac{1}{2}$ cm.; the infant weighed 7 pounds. The other stillborn infant was the result of a prolapsed cord, pulseless when that accident was discovered, and after delivery disclosed a large spina bifida incompatible with life. Two infants died from prematurity, the result of too early interruption of pregnancy. These two deaths and the prolapsed cord give the fair mortality of induced labor, in this group of cases, of 10 per cent. The death from prolapsed cord might have been prevented by earlier recognition, and is one of the disadvantages of avoiding frequent vaginal examinations in the conduct of labor, which however has always been my practice. Prolapse of the cord is certainly a rare complication of induced labor, having occurred in less than one per cent. in my experience. One infant died on the fifteenth day from infection of the navel; one on the third day, having previously been perfectly well, from a sudden and rapidly fatal intraperitoneal hemorrhage (autopsy); and one on the fifth day from aspiration pneumonia (an easy low forceps operation).

Neither of these deaths can be fairly attributed to the induced labors. If I or anyone else had elected to do Cæsarean section on these 30 patients in hospital and private practice is it likely that the ultimate results would have been better as regards maternal and fetal mortality and morbidity? Ten per cent. primary fetal mortality; seventy-seven per cent. of the children living to-day from two to ten years of age. Cæsarean section would have occasioned greater notoriety but not greater satisfaction to an earnest student of practical obstetrics.

PRESTON RETREAT, 20TH AND HAMILTON STREETS.

THE INTRODUCTION OF CLINICAL TEACHING OF OBSTETRICS IN THE UNITED STATES.¹

BY

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A FEW months ago at a gathering of a number of prominent gynecologists from various parts of the country, some one inquired what contributions Dr. James P. White, of Buffalo, had made to medicine to justify placing his bust in a prominent situation in the New York Academy of Medicine. With the exception of Dr. Matthew D. Mann, his successor at the University of Buffalo, no one present knew much about Dr. White or his work. I have therefore thought that it might be both interesting and profitable to recall to you how greatly medical students in this country are indebted to him for the introduction of more rational and effective methods of instruction in obstetrics.

James P. White was born in Columbia County, New York, in 1811, and settled in Buffalo after graduating in medicine. In 1846, in association with Austin Flint and others, he organized the Medical Department of the University of Buffalo, in which he was appointed Professor of Obstetrics, a position which he held until his retirement from active work, shortly before his death in 1882.

He had, no doubt, given very satisfactory courses in obstetrics

¹Read before the Historical Club of the Johns Hopkins Hospital, January 11, 1904.

in previous years, but on January 18th, 1850, he introduced a decided innovation by delivering an Irish girl before the graduating class, which, as far as I can learn, was the first attempt of the kind in America. The patient, Mary Watson, who had already had one normal labor, was induced by Dr. White to enter the family of the janitor of the Medical School ten days before the expected date of confinement. The apartments of the janitor were in the cellar of the college building, and his wife promised to act as nurse for the woman during and after her confinement. During this period, Dr. White, on separate occasions, allowed each of the twenty members of the graduating class to see the woman, and to auscultate the fetal heart sounds by means of the stethoscope. Owing to the fact that they were best heard far back in the right flank, a diagnosis of a right occipito-posterior position was made.

At the time of labor the students were brought into the room one by one and afforded an opportunity to examine the patient under the guidance of the professor, while at the end of the second stage, the entire class was called, when the patient was placed upon her left side, the bed clothes drawn back so as to expose the genitalia and buttocks and the child delivered by Professor White in their presence.

The course of labor confirmed the diagnosis as to the position of the child, as it was born with the occiput posterior. The woman made an excellent recovery and left the janitor's home very well pleased with her treatment, which she stated was far better than she could have received under other circumstances.

As will appear, this was regarded as a startling innovation and soon became a topic of general conversation in Buffalo, both the public and the medical profession being divided as to its advisability and even as to its morality. The feeling concerning it soon became so strong that the students felt called upon to pass a series of resolutions thanking Professor White for what he had done. These, along with a short editorial by Austin Flint, were published in the *Buffalo Medical Journal* for February, 1850, under the title of "Demonstrative Midwifery," as follows:

"DEMONSTRATIVE MIDWIFERY.—The subjoined correspondence, occasioned by the introduction of clinical or demonstrative midwifery, in connection with the lectures on that branch of medicine in the Medical College of Buffalo, has been handed to us by the Chairman of the meeting, with a request that it be

inserted in this *Journal*. We take pleasure in complying with this request.

"The illustration of labor with the living subject is, doubtless, a novelty in this country. We are not aware that it has ever before been attempted. It enters, however, into the instruction of some foreign schools, constituting one of the features in which the latter are supposed to possess advantages over our domestic institutions. Whatever may be the sentiments on the subject entertained by a portion of the community at large (were it to be submitted to them), the plan must, we think, commend itself to the cordial approbation of the medical profession; and, indeed, as it seems to us, the more intelligent members of any community, not excepting the female portion, must appreciate not alone the motives and the object, but its propriety in view of better preparing those soon to become practitioners of medicine, for the responsible duties of the accoucheur. It should be stated that, during the demonstration, every regard was had for delicacy, the patient being entirely concealed from observation, except in so far as was requisite for the illustration. The privilege of being present was restricted to candidates for graduation, and medical gentlemen in attendance on the course of lectures; all of whom exhibited that degree of decorum so proper to the occasion."

The following is the correspondence referred to:

"University of Buffalo, Buffalo,

"Medical Department, Jan. 21, 1850.

"The candidates for graduation having met pursuant to adjournment, W. B. Williams was appointed Chairman, C. C. Jewett, Secretary. The report of the Committee was then called for. Whereupon the Committee offered the following Preamble and Resolutions, which were adopted:

"The Committee appointed at a meeting of the candidates of the class of 1848-50, for the purpose of expressing to Prof. White their sense of obligation for his recent and unusual efforts in our behalf, and to tender him their thanks for extending to them advantages unprecedented in this country, would respectfully offer the following Resolutions:

"Resolved, 1st. That in the recent successful endeavors of Prof. White to establish clinical teaching in connection with the instruction of his department, we have an invaluable addition to our already extended and liberal advantages from the Chair of Obstetrics.

"2nd. That we feel no ordinary degree of pride and congratulation in claiming for the Medical Department of the University of Buffalo the honor of being the first and, at present, the only among the American Schools of Medicine, where Clinical Instruction in Midwifery is rendered within the walls of the institution.

"3rd. That we tender to Prof. White our sincere thanks for his indefatigable efforts in rendering the subject of Obstetrics so simple and plain, and especially in lately presenting for our instruction a case of *natural labor*.

"C. C. Van Anden,
Jas. S. Hawley,
John Root,

"Committee.

"The Secretary and Chairman were instructed to present to Prof. White a copy of the proceedings of this meeting; and also to furnish a copy for publication in the *Buffalo Medical Journal*.

"W. B. WILLIAMS, *Chairman*.

"CHARLES C. JEWETT, *Secretary*."

"The following reply of Prof. White to the Committee has been handed to us, with a request from the Committee, that it be inserted in connection with the foregoing resolutions:

"University of Buffalo,
"Jan. 25, 1850.

"GENTLEMEN:—Your note containing a copy of the resolutions passed by the graduating class of the University of Buffalo, is just received.

"Permit me to express my sense of obligation to yourselves and associates for the very flattering notice you have been pleased to take of the recent successful effort to demonstrate to them a natural labor. Your approbation affords me sincere pleasure.

"Though conceded by all to be a great desideratum, it was nevertheless an innovation, and likely to be opposed by popular prejudice, and without *your co-operation* it could not have been satisfactorily accomplished in the present instance, nor the hope of its repetition indulged.

"Be assured, therefore, that if any permanent progress has been made in the facilities for instruction in the important department, in which I have the honor to guide your investigations, it is mainly attributable to the serious decorum and the gentleman-

like deportment which were scrupulously observed by every member of the class on that occasion.

"In the confident belief that with such an auspicious commencement there will be little difficulty in furnishing the same much needed opportunity for observation to those who may succeed you, I remain with sentiments of great regard, your friend and truly humble servant,

"JAMES P. WHITE.

"To Messrs. W. B. Williams,

"Charles C. Jewett, &c., &c."

This, the first publication concerning the case, still further accentuated the bitter feelings existing in Buffalo. The sentiment against Dr. White, which we regret to state was fostered by certain physicians, who were apparently jealous of the success of the Medical College, soon became so pronounced that the students of the graduating class who had witnessed the demonstration, felt called upon to publish in the March number of the *Buffalo Medical Journal* a refutation of the charges which had been made.

"Buffalo Medical College,

"Feb. 15, 1850.

"Whereas, the circumstances attending the recent case of Demonstrative Midwifery, at the Buffalo Medical College, have been industriously and entirely misrepresented, and the truth perverted, the undersigned graduates of the College, for the session of 1849-50, and who are personally conversant with the facts,—anxious to disabuse the public of erroneous impressions, however induced, can but emphatically pronounce the allegation that any rule of propriety was violated on that occasion, gratuitous and untrue. That everything was conducted in strict accordance with decency, humanity and decorum, we unhesitatingly affirm. As it was the object of the Professor to exhibit the *best manner* of conducting a case of midwifery, no motive, whatever, could exist for any violation of the proprieties suitable to the occasion.

"If personal testimony to the courtesy and discretion of our preceptor in admitting the members of the class, for brief periods only, and for the most part singly to the parturient chamber, as well as enjoining the most scrupulous regard to delicacy and order throughout, avail anything—it is earnestly submitted, either to discourage censure, or correct misapprehension.

"Having been severally present on the occasion referred to, and

being on the eve of a final separation, we feel impelled, from a sense of regard to truth, to our preceptor, and the interests of science, to render our testimony to the facts, and our tribute of approval and gratitude, for this means of improvement in obstetrical knowledge; and to insist on its merited immunity from misrepresentation.

“(Signed). Charles E. Van Anden, Auburn,
Samuel E. Brinkerhoff, Auburn,
Thomas Burns, Illinois,
Hugh B. Van Deventer, Buffalo,
John A. Morse, Constantine, Mich.,
Alfred H. Robbins, Logansport, Ia.,
John E. Ware, C. W.,
Clinton Colegrove, Sardinia,
James S. Hawley, Camillus,
John Root, Sweden, N. Y.,
William Thorne, Sinclearville,
Charles C. Jewett, Moravia,
Hugh McKennon, Middleport,
L. F. Hillman, Parma,
Peter B. Brown, Somerset,
George A. Hewson, Penn Yan,
Edwin G. Bly, Buffalo,
William Hyser, Buffalo,
J. V. B. Williams, Hallsburg, Pa.,
Matthew F. Haney, St. Johns, C. W.”

A few days later, February 19th, 1850, an editorial appeared in the *Buffalo Commercial Advertiser*, taking Prof. White's side, in which it was stated: "We learn from the patient that everything was perfectly satisfactory. In fact the character of the Faculty of the College is a sufficient guarantee of this, and that nothing but the desire to subvert the cause of Science and of humanity in the most effective way, would have constrained them to favor the introduction of Clinical or Demonstrative Midwifery into the Institution in face of the strong prejudice which exists, growing out of the fact that we in this country have not been accustomed to consider its importance and its necessity to enable the student to acquire a practical knowledge of this branch of the profession."

This attempt to justify Dr. White's innovation to the community at large was not successful, and only served to increase the

bitterness of the discussion, as it was followed a day or two later by a scathing editorial in the *Buffalo Courier*, signed "L," which was so venomous that Dr. White felt impelled to invoke the protection of the law by instituting a libel suit against Dr. Horatio N. Loomis, of Buffalo, its supposed author.

The editorial read as follows:

"MESSRS. EDITORS:—A writer in the *Commercial Advertiser* of this city, has attempted to defend a *gross outrage* upon public decency, and I claim the right to reply to him, although the subject is one of so delicate a nature as hardly to be susceptible of much handling.

"I speak of the article, in the *Commercial* of Tuesday, which refers to the recent 'clinical' exhibition at the 'University of Buffalo—Medical Department;' an article which was evidently intended to foil public opinion, already setting strongly against the perpetrators of the indecency, and, through the respectability of the print in which it appeared, to give that sentiment another direction.

"Without stopping to inquire the authorship of the article, although I would willingly believe that the responsible editor is not to be charged with it, let us for a moment glance at the arguments advanced in it, with a view to placing the matter upon a footing consistent with 'even-handed justice' and a proper regard for the proprieties of life.

"An open demonstration of obstetrical practice has been made before a class of students. The demonstration consumed nearly or quite *eight hours*, during a part, at least, of which the professor of that branch of medical instruction was present. Delicacy forbids me to touch upon the manner in which those hours were passed—suffice it to say that the tedium was relieved by such methods as a congregation of *boys* would know well how to employ.

"Thus stand the facts. The argument in defence is, that such things are allowed in foreign schools, and the palliation that such instruction is necessary to the student.

"The article was written, or dictated, by one who knew better than to use such an argument, or urge such a palliation.

"*No school* on the face of the earth ever tolerated a like exhibition, save the 'Medical Department of the University of Buffalo.' In those Continental Hospitals for Lying-in Females,

which are open to the students of Medical Schools, the utmost propriety is observed, and so far from exposing a suffering woman to the unrestricted gaze of an entire class, the managers are careful that but one or two students shall ever be admitted to a single ward, and these are always accompanied by their own private instructor.

"As to the necessity or usefulness of the indecorous show, let any physician answer. How strongly is the rule inculcated in all books, and how enjoined upon their pupils by all respectable physicians, that in this branch of practice the eye is to be blinded? The ear may listen to the plaintive appeals of the suffering patient—the voice may utter words of hopefulness, to sustain her through her trial, but the eye is closed to the scene. What possible good then can accrue from an undisguised exposure like this?

"I look upon the whole thing as an attempt to build up, for *some one*, a reputation, on a basis entirely unworthy the sacred cause of science. The patient was a woman in humble circumstances, whose poverty, perhaps, overruled her natural modesty. What mattered it then, if a score of scarcely adolescent youths satisfied their *meretricious curiosity* at her expense? The professor had enjoyed his 'clinique' and his class their *salacious stare*, and, under the specious plea of scientific advancement, a precedent had been set for outrage indiscriminate. God forbid that it should be followed in our time. Long may the men who have established it, continue to stand as solitary and splendid examples of scientific innovators, in advance of the age. L."

After the appearance of this editorial, the discussion became still more bitter and the public interest so aroused that the Faculty of the Medical Department of the University of Buffalo adopted the following resolutions, which were published in the daily papers:

"At a meeting of the Faculty of the Medical Department of the University of Buffalo, held February 26, 1850, the following preamble and resolutions were adopted, and their publication ordered:

"Whereas, It appears that grossly exaggerated and erroneous statements relative to instruction in Midwifery at the Medical College of Buffalo, have been industriously circulated, calculated if not designed, to excite prejudice toward the Institution, or to some one or more of the individuals therewith connected, therefore—

"Resolved, That the mode of clinical instruction pursued by the Professor of Midwifery in this College was adopted with the approbation of the Medical Faculty of the Institution, and was conducted in a manner to receive their approval.

"Resolved, That in all the methods of instruction pursued in the department of Midwifery, as in all the branches taught in the Institution, the only objects recognized are the interests of the students in the acquisition of useful knowledge, and thereby the interests of medical science and humanity.

"Resolved, That in the opinion of the Faculty, a correct knowledge of the facts appertaining to the mode of clinical or demonstrative Midwifery, recently practised at the Medical College of Buffalo, will, it is believed, satisfy all intelligent and unprejudiced persons of its entire propriety and usefulness.

"Resolved, That the Faculty believe this method of instruction is pursued by distinguished European teachers, and they have never before heard its propriety called in question.

"AUSTIN FLINT, *Dean*.

"GEO. HADLEY, *Registrar*."

Even this action of the Faculty, however, did not have the desired effect, for in the *Buffalo Medical Journal* for March there appeared a letter, signed by 17 out of the 40 physicians of Buffalo, strongly protesting against the repetition of such a procedure. This letter was extremely bitter, and, at the present day, cannot be regarded otherwise than as a literary curiosity.

"To DR. AUSTIN FLINT, EDITOR, &c.,

"Sir:—The undersigned, members of the Medical Profession, have noticed with regret, in the February number of your journal, the Editorial article, and the correspondence to which it refers, called 'Demonstrative Midwifery.'

"The propriety of the exhibition with the living subject, before the graduating class at the College, as we understand it, does not, in our view, admit of a public discussion; and our only object in this communication is to say that the practice does not 'commend itself to the cordial approbation of the medical profession' of Buffalo; but on the contrary, merits a severe rebuke; because we deem it wholly unnecessary for the purpose of teaching, unprofessional in manner, and grossly offensive alike to morality and common decency. For the credit of the medical profession

we hope this 'innovation' will not be repeated in this, or any civilized community.

"BUFFALO, Feb. 21, 1850.

"John Hauenstein,
John S. Trowbridge,
E. F. Gray,
J. D. Hill,
H. D. Garvin,
Geo. N. Burwell,
C. C. Wyckoff,
William Ring,

J. Trowbridge,
B. Burwell,
M. Bristol,
A. S. Sprague,
Josiah Barnes,
H. H. Bissell,
Joseph Peabody,
G. F. Pratt,

S. Barrett."

This letter was copied by the *Buffalo Courier* and the *Christian Advocate*, and was accompanied by such a severe editorial in the latter publication that Dr. White felt called upon to take steps to have its editor indicted for criminal libel.

After this, the entire question passed beyond the bounds of Buffalo and became a matter of general interest, so that within a short time nearly every medical journal in the country devoted an editorial to it, and in the vast majority of cases commended the innovation.

That the medical profession throughout the country did not share the feelings of the 17 physicians of Buffalo, who signed the above letter, was shown by the action of the physicians of Lockport, N. Y., and Racine, Wis.

All the physicians of the former town, with the exception of one who was temporarily absent, united in the preparation of the following letter endorsing Dr. White's conduct, which was published in the *Buffalo Medical Journal* for April, 1850:

"Lockport, April 2, 1850.

"DR. FLINT,

"Sir:—The undersigned have read the editorial article, the correspondence and resolutions of the class, and the letter of seventeen medical gentlemen of the City of Buffalo, contained in the February and March numbers of the *Buffalo Medical Journal* on the subject of 'Demonstrative Midwifery,' and have also conversed with a member of the class, and are happy to say that the plan commends itself to our most cordial approbation.

"Caleb Hill, M.D.,
Daniel Morse,
J. S. Shuler,
B. L. Delano,

D. S. Fossett,
W. B. Gould,
James C. May,
J. K. Skinner,

Wm. M'Collum."

One month later, similar action was taken by 10 physicians of Racine, Wis., whose communication was published in the *Buffalo Medical Journal* for June, 1850.

"Racine, Wis.,

"May 10, 1850.

"PROFESSOR J. P. WHITE,

"Dear Sir:—The undersigned, practising physicians in this city, having perused the correspondence relative to the introduction of Demonstrative Midwifery in the University of Buffalo, take pleasure in expressing to you their unqualified approbation of the course pursued in the Department of Obstetrics.

"Allow us, Sir, to hope and expect that the work so begun shall be prosecuted until the medical student shall have had time to qualify himself in all the studies of his profession.

"Signed by

"William Watkins,

Aug. H. Hatchett,

B. B. Carey,

Joseph B. Talcott,

W. Wadsworth,

P. Laurence Page,

Samuel W. Wilson,

E. Jamison,

Edward Everitt,

S. H. Graves."

As has already been mentioned, it was supposed that the editorial which appeared in the *Buffalo Courier*, signed "L," had been written by Dr. Horatio N. Loomis, and for this reason, and particularly because he was very industrious in criticising the demonstration at the University of Buffalo and arousing public sentiment against it, Dr. White felt called upon to sue him for criminal libel.

At the trial, which began June 24th, 1850, and lasted four days, the fact was brought out that Dr. Loomis had not written the article himself, but had been so pleased with it that he went to the newspaper office to procure a supply of papers containing it, and, upon finding that the edition was exhausted and the type already distributed, paid for having the article set up again and ordered one hundred copies of the article stricken off, which he distributed among his friends in Buffalo and other places.

The case was of very considerable interest and was hotly contested by both sides. Dr. Loomis called in his defense three of the medical students who had seen the demonstration, and four physicians of Buffalo, who had signed the protest referred to above. The testimony of the latter was quite similar, as they all agreed that exposure of the patient was absolutely unnecessary for purposes of instruction and could only do harm by lowering the

moral tone of the community. At the same time, none of them objected to vaginal examinations, provided they were made under a sheet and without exposing the patient; though several thought that even such instruction might be advantageously deferred until after graduation, when the young practitioner could gain the necessary knowledge from his first patients.

Some idea of the character of testimony offered for the defendant may be gained from the stenographic report of the trial—*The People vs. Dr. Horatio N. Loomis, for libel*. Tried at the Erie County Court of oyer and terminer, June 24, 1850. Buffalo, Thomas & Co., 50 pp.

Thus, on page 13, Dr. Bryant Burwell testified as follows: "He has been a practising physician and surgeon between thirty-three and thirty-five years—graduated at the Fairfield Medical School. Regards teaching Obstetrics demonstratively as neither necessary nor proper. Thinks that a student in Midwifery can be taught much better by the hearing and the touch than by the eye. If he is taught by the eye and practices in the ordinary way, thinks it would not be as well."

Cross Examined.—"It is not necessary, in any one case that he knows of, to make an ocular demonstration. The student can learn the distention of the perineum properly, only by the sense of touch. The external parts can as well be seen upon plates as by ocular demonstration. Considers exhibition upon *papier maché* models of all the different parts, as perfectly proper, and does not think that there is anything indelicate in them. He thinks that a student can get nearly as good an idea of Midwifery by the study of *Comparative Anatomy from the parts of inferior animals, as from the human subject*—they do not essentially differ—the distention of the soft parts being very similar. He does not know how Obstetrics has been taught in France and Germany—that the leading schools are in Paris, London, Dublin, and in Germany. Does not consider that teaching by ocular demonstration would obviate the necessity of learning by the touch, and that a student would not be competent to practice it, if taught by sight alone. Has never made Midwifery his particular object of teaching, except to his students in his private practice—has allowed them to make vaginal examinations, and has occasionally given them charge of the labor; and sometimes when called in the night, he has sent them alone to take charge of the patient—thinks there is nothing improper in that. Has known Dr. White eighteen years; knows that he still continues to practice as a

physician in the city—he is Professor of Obstetrics in the Buffalo Medical College—does not know that he directs his attention any more to Midwifery than to Medicine. He is a general practitioner.”

The testimony of Dr. Gorham F. Pratt was of the same character, page 14: “I have practised medicine 17 years. I am a licentiate of the Fairfield Medical School at Herkimer. Have had considerable practice in Midwifery. Do not think demonstration by actual exposure of the parts necessary to teach this science. I think that mode unnecessary and improper. I disapprove of it. I think it offensive to the moral sense of the community—calculated to lower the respect of the medical profession. It is a part of medical ethics to do no act calculated to produce that effect upon the community.

“I think all that is necessary to be learned in regard to the dilatation of the uterus, might be learned from plates; and so far as sight is concerned, I can’t conceive that anything can be learned by it, but the gratification of an idle curiosity. Sight could not supply the advantages of the sense of touch.”

Cross Examined.—“The anatomy and mechanism of labor would be better understood from plates, than by looking at the natural surface of the woman. It is important to see plates of the external parts. I should think the natural parts *might* be more useful to be seen than the plates. Don’t know that the information got from plates, would be got quicker from the living subject. I think it shocks the moral sense of the community. Would not oppose an operation for the stone, which young men should be permitted to see. Not shocking to moral sense, perfectly proper. Ocular demonstration shocks the moral sense of the community, because it is not necessary. Never saw any new thing introduced in medical science. Don’t remember when the stethoscope was introduced. Don’t know there was any opposition to it.”

The prosecution called a large number of witnesses, some from Buffalo and the neighboring towns, and others from a considerable distance. Among the latter were Dr. C. R. Gilman, Professor of Obstetrics in the College of Physicians and Surgeons, New York; Dr. H. A. Ackley, Professor of Surgery in the Western Reserve University, Cleveland; Dr. Charles B. Coventry, Utica, New York, Professor of Obstetrics in the Geneva College; and Dr. Charles A. Lee, of New York. In addition to these experts, a large number of physicians who had been educated in Europe

testified, and they all agreed that such methods of instruction were commonly employed in the European hospitals and were urgently needed in this country.

Dr. Gilman expressed himself as regretting that his own students did not enjoy similar advantages, but felt that he had not the moral courage to introduce such an innovation in the face of the protests to which it would probably give rise.

Dr. White's attorney, the Hon. H. K. Smith, made a brilliant and earnest plea for the conviction of the defendant, stating that almost everyone who had introduced an innovation in the methods of practice or teaching medicine either in this country or abroad, had been the subject of misunderstanding and opprobrium. He referred very sarcastically to the testimony of Dr. Bryant Burwell, in a manner which seems worthy of quotation (Report, p. 40): "One of the defendant's witnesses has placed himself in the front rank of investigating minds. He says that quite as accurate a conception of the distention of a woman's perineum in labor can be procured from comparative anatomy as from the living subject! And we of course are bound to yield to the superior knowledge of this erudite witness. To support the perineum properly, all concede to be most important; but all a physician has to do, is to take his student in the spring of the year to the barn enclosure and have him witness the parturition of a calf—and he is prepared to take his Diploma in Midwifery. He knows then how to support the perineum. Or, if he be somewhat obtuse, why, let him observe with attention the distention of the perineum when the hen lays her egg; and then he is complete in his studies by the rule of comparative anatomy. Let no man file his caveat in the Patent Office at Washington. This discovery belongs solely to Dr. Bryant Burwell."

The trial ended in the acquittal of Dr. Loomis. As far as I have been able to learn the indictment against the editor of the *Christian Advocate* was not followed up.

Dr. Loomis' acquittal, however, did not end the matter, as, after the appearance of the stenographic report of the trial, it was once more taken up by the medical journals, most of which, following the lead of the *Buffalo Medical Journal*, endorsed Dr. White's innovation, but several disapproved strongly of it.

One of the most adverse criticisms, signed "C. M.," was contained in the July number of the *American Journal of Medical Sciences*, (1850, N. S. XX, 445-51). At first its author was believed to be Charles Meigs, Professor of Obstetrics in the Jeffer-

son College, of Philadelphia, but later it was discovered that Caspar Morris was responsible for it. The first part of the editorial was devoted to general considerations. Further on, Dr. White was severely criticised for claiming anything original in determining the presentation of the child by means of the stethoscope, but particularly for allowing it to remain in its posterior position, instead of converting it into an anterior one; since by failing to do so he subjected the child to more and the mother to less danger. Before making these criticisms, the writer said, "Some months since we heard references to the excitement which had been created among the people of Buffalo by an attempt on the part of the Medical College established in that city to introduce 'Demonstrative Midwifery' into their course of instruction. Having ourselves enjoyed the benefit of such instruction while a pupil, knowing that it was still afforded to students of this city, and accustomed to esteem it as highly important, we were not a little surprised to find it considered a novelty anywhere, and yet more to understand how it could be made a subject of popular odium. When, however, we came to be apprised that the improvement consisted in subjecting the process of parturition to ocular inspection in one of its stages, our surprise at the excitement yielded to astonishment that any teacher of the obstetric art should suppose it could be made the subject of the sense of vision, and mortification that the medical profession should have been placed in a position so well characterized to array public feeling in hostility to it. We have never understood the full details of the case until we read the report of the trial and the testimony of the witnesses, etc."

In the latter part of the article the writer inveighed strongly against such a practice, and said that were students to become accustomed to ocular instruction, they would lose to a great extent their delicacy of touch.

In the following number of the same Journal (1851, N. S. XXI. 270), a second editorial appeared upon the subject, in which it is stated that having received a letter from Professor White in reference to his supposed neglect of the patient, the editor willingly retracted everything which reflected upon Professor White's medical treatment of the case and admitted "that the language of the reviewer was too strong," but after having made these admissions, he concluded:

"These we consider, however, as points of secondary interest—of importance only that injustice may not be done to individuals

—they leave the main question, the propriety and advantage of 'Demonstrative Midwifery' as practised in Buffalo, unaffected. Respecting this, we must concur with the reviewer in all that is said of it, both as a means of furnishing instruction and on the score of expediency and propriety. And these sentiments are not confined, as is supposed by some, to a small minority of the profession. We have yet to meet with a single respectable physician of Philadelphia who does not concur with it; indeed it is, so far as we have been able to learn, the unanimous sentiment of the profession of this city, and if we may judge from the sources of our information, that of a large majority of the profession in the United States."

It is interesting to note the supposed unanimity of the profession of Philadelphia against the innovation, and it affords another illustration of the fact that the profession of that city opposed nearly all the improvements which were suggested about the same time for the improvement of obstetrical work. In this connection it is only necessary to refer to the vigorous opposition of Meigs, Hodge and their followers to the acceptance of the contagious nature of childbed fever and to the use of anesthesia in labor.

The discussion, however, did not end with mere newspaper comment and editorials in the medical press, since the matter was referred to the Committee on Education of the Medical Association, whose members were W. Hooker, Norwich, Conn.; T. A. Blatchford, Troy, N. Y.; James A. Wood, New York, and Noah H. Davis, Chicago.

This committee made its report at the Charleston, S. C., meeting of the Association in May, 1851. (*Trans. Am. Med. Assn.*, 1851, 436-444: "Report of the Committee on Medical Education in relation to Demonstrative Midwifery.") After stating that the morality or immorality of any procedure in medicine depends entirely upon its necessity and the advantages which may accrue to the patient from it, the Committee held that the practice under consideration was not really immoral or wrong, but was entirely unnecessary for purposes of instruction. Their point of view can best be appreciated from their own words:

"The simple question then to be decided is, whether the mode of instruction developed in the case before us, and styled by its advocates demonstrative midwifery, is necessary in the preparation of students for practice. To decide this question, let us look at

the advantages which have been claimed to belong to this mode of instruction.

"It cannot be pretended, and we believe is not by anyone, that anything can be learned by the sight up to the moment of the completion of the labor. All before that must necessarily be learned by the touch alone.

"There are four advantages claimed to attend an exposure to the sight of the conclusion of the process of labor. We will notice each of these separately:

"1st. The student sees the manner in which the head of the child, or whatever part presents, emerges from the os externum. All that is of practical use in regard to this can be so well learned from description and plates, and from exhibitions on the machines commonly used in the lecture room, that there is clearly no need of an exhibition of the living subject to prepare the student on this point for practice. And whatever he does not learn in regard to it by these means, can be learned by the touch in the first case upon which he is called to attend. No practitioner ever had any desire to see the presenting part emerge under the arch of the pubis for any additional knowledge that might be gained by such an exposure.

"2nd. By the exposure of the parts to the sight at the conclusion of the labor, the student is impressed with the importance of supporting the perineum. On this point we simply remark that, if any student cannot be properly impressed with the importance of this act by the teachings of his preceptor without ocular demonstration, he has too dull an appreciation of truth and responsibility to take upon himself the office of a physician.

"3rd. The exposure contended for shows the student the manner in which the perineum should be supported. In learning how to do a manual operation, which, when learned, is to be done without the guidance of sight, the use of sight is not needed except when the operation is a difficult or complicated one. That supporting the perineum is an operation of this character, cannot be pretended. It is about as simple an act as can be conceived of, and the student who needs the aid of his eyes to learn how to do it had better retire at once to some occupation which requires less tact and talent than the practice of medicine. In the case before us, the accoucheur used a napkin, which, unless it was very adroitly managed, must have prevented the twenty spectators from seeing very distinctly the exact manner in which he supported the perineum.

"4th. This exposure verified, to the satisfaction of the students, the diagnosis of the professor in regard to the position of the child. But a resort to such evidence for this purpose is certainly unnecessary. The diagnosis can be verified by touch on the part of the student during the progress of the labor; or it can be taken at the word of the professor, which ought to be satisfactory.

"Granting all that can be claimed with any plausibility for the advantages mentioned, they are not of sufficient value to make it proper that woman in the hour of her extremity should be made the subject of a public exhibition.

"But we not only object to the mode of instruction, adopted in the plan at Buffalo, as unnecessary, but we object to it, also, as being utterly *incompetent to give the student that knowledge which he needs in the practice of obstetrics*. It cannot take the place at all of what may properly be termed Clinical Instruction in Midwifery. A single hasty examination by the touch in the course of the labor, and a view of the conclusion of the process, can supply the student with but a very small part of that practical knowledge which he needs when he comes to take charge of patients upon his own responsibility alone. This knowledge he can obtain effectually only by taking the care of cases of midwifery during his pupilage under the supervision of his preceptor. A single case, thus managed, will teach him more than a multitude of such exposures as that which was made in the Buffalo Medical College possibly could do."

It is interesting to note, however, that all the objections urged against this method of teaching were without avail, as the general sentiment of the profession was that it was advantageous to the student and without harm to the woman, and accordingly it came to be more and more extensively employed, so that in recent years it has come into general use in every Lying-in Hospital in the country; though it is rare where material is abundant for a patient to be exposed before a large body of students, the number admitted to each case being usually limited.

Moreover, the widespread opposition of many otherwise well informed medical men, to the conduct of labor under the guidance of the eye would seem to offer a satisfactory explanation for the low grade of obstetrical technique which for so long a period characterized American medicine. Thus, the delivery of the patient by the sense of touch under a sheet, necessarily precluded the detection of all but the most extensive perineal tears, and enables

one to understand how a physician could conscientiously state that in an experience extending over several thousand cases of labor, he had only rarely encountered such an accident.

Likewise, the fact that any exposure of the patient was considered improper, naturally caused the physician to regard the practice of obstetrics as a somewhat demeaning occupation, and thus led to its being carried out in a perfunctory manner, and without the interest and accurate observation which are absolutely essential to the advancement of knowledge.

At the present time, it is perhaps difficult for us to understand how such an apparently simple procedure could have given rise to so much indignation and discussion, but if we recall the conditions then existing, its possibility can easily be understood; for it had only been within a comparatively recent period that it had been considered respectable for women in labor to be attended by a man, the practice of obstetrics having previously been in the hands of ignorant midwives, physicians being called upon only when some grave and exceptional complication arose.

Moreover, it is a matter of history that the early obstetricians were subjected to grave criticism and the entire subject of obstetrics was markedly neglected in the Medical Schools. Although William Shippen introduced the teaching of midwifery in Philadelphia in 1765, it was not until nearly 50 years later that his successor, Thomas C. James, became full Professor of that branch of Medicine, and its study was made obligatory upon all students.

Moreover, just prior to the introduction of "Demonstrative Midwifery," a vigorous crusade had been instituted, particularly in the New England States, against the employment of physicians in obstetric work, and in favor of the education and employment of midwives.

Some idea of the virulence of the agitation may be gained from the pamphlet written by Samuel Gregory, of Boston, in 1848, and entitled "Man Midwifery Exposed and Corrected, or the employment of men to attend women in childbirth and other delicate circumstances, shown to be a modern innovation, unnecessary and unnatural, and injurious to the physical welfare of the community and pernicious in its influences on professional and public morality; and the whole proved by numerous facts, and the testimony of the most eminent physicians in Boston and other places; and the education and employment of midwives recommended, together with remarks on the use and abuse of ether and Dr. Channing's 'Cases of Inhalation of Ether in Labor.'"

That the pamphlet did not merely represent the ravings of an enthusiast is shown by the fact that its teachings were commended by editorials in the *New York Tribune*, the *Boston Traveller* and other newspapers.

A STATISTICAL STUDY OF THE ALBUMINURIA OF PREGNANCY, LABOR AND THE PUERPERIUM.¹

BY

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SINCE Rayer, in 1839, showed the association of diseases of the kidneys with pregnancy, and four years later Lever reported that albumin was frequently present in the urine of eclamptics, the majority of medical men have looked upon eclampsia as coincident with, if not consequent upon, renal disease, and have considered the condition of the urine of the greatest importance in the diagnosis of impending eclampsia. The urinary examination is usually limited to noting the reaction and specific gravity of the urine, and testing for the presence of sugar and albumin; while occasionally one makes a quantitative determination of the amount of albumin and still less frequently of the urea excreted daily.

The presence of albumin, however, must be considered of doubtful significance unless two important facts are continually kept in mind; firstly, that the investigations of Ingerslev, Schroeder and Charpentier, based upon 112, 62 and 143 cases, respectively, have conclusively proven that eclampsia may occur independently of the presence of albumin in the urine; and secondly, that albuminuria is much more frequently present during pregnancy, labor and the puerperium than is generally supposed; so that deductions as to the patient's condition based on this abnormality alone are difficult to make, and questionable when made.

The statements as to how frequently albumin is present are very conflicting and with the object of obtaining an independent idea on the subject I made, at Dr. Williams' suggestion, an analysis of the urinary records of 967 patients confined in the Johns Hopkins Hospital. Unfortunately, these records were by no

¹From the Obstetrical Department of the Johns Hopkins University and Hospital.

means uniform, in that each case was not invariably examined before, during and after labor; so that the results under each of these headings must be considered quite separately. Voided specimens were examined once a week during pregnancy and usually on the tenth day of the puerperium; in addition a specimen was obtained by catheterization during or immediately following the third stage of labor. The results are as follows:

TABLE I.—General results from 967 cases. 547 Primiparae, 420 Multiparae. The figures signify percentages, save in the uppermost line.

	Pregnancy.			Labor,			Puerperium.		
	Total.	Ip.	+ p.	Total.	Ip.	+ p.	Total.	Ip.	+ p.
Negative.....	715	418	297	560	341	219	538	302	236
Albumin, all cases.....	49.2	46.9	52.5	37	31.7	42.4	43	40	46.6
Albumin, all cases.....	48.8	51.2	45.5	62	66.3	44.3	56.5	59.6	52.5
Casts and Albumin....	10.1	11.5	8	18	22	11.9	11.5	13.9	8.9
Casts, no Albumin ...	1.9	2	2	.5	.....	1.4	.5	.4	.9

These results differed so markedly from those obtained by other observers that it was decided to make a further careful investigation of 100 consecutive cases, examining both voided urine and that secured by catheterization, with a view of either confirming our previous results or determining where they were in error. Voided specimens were examined by the clinical clerk weekly during pregnancy, as well as another specimen the fourteenth day of the puerperium. Catheterized specimens of urine were also obtained once every two weeks during pregnancy, immediately after the third stage of labor and on the tenth day postpartum. These last I have personally examined in each case.

The technic of catheterization was that in general use in the wards of the Johns Hopkins Hospital and was as follows:

A glass or silver catheter, a pair of thumb forceps, several cotton pledgets and a rubber glove or portion thereof, are boiled for five minutes in a metal vessel. The water is then poured off and replaced by a saturated solution of boric acid. The hands of the nurse are scrubbed for three minutes and soaked for three minutes in 1-1000 solution of bichloride of mercury, after which the glove or finger cots are drawn on the hand to be applied to the patient. The urethral crifice is cleansed by the use of at least six pledgets applied with the thumb forceps, and the catheter is then intro-

duced. After the urine has been drawn off and the catheter removed, more pledgets are applied. That this routine has been practised in almost 400 instances for procuring the material for the present study, without the slightest mishap, speaks very highly for the care exercised by the nurses in charge, which I take this opportunity of acknowledging.

By examining in the manner described both voided specimens and those obtained by catheterization, it was possible to note whether catheterization exerted any influence upon the results obtained, as well as how closely the findings of the two observers would correspond when working with specimens obtained at different times from the same patient.

The urine was collected in conical glasses, and after being allowed to stand a couple of hours, the lowermost portion was removed with a pipette, and then centrifugalized at high velocity for about two minutes. The sediment thus obtained was invariably examined microscopically, while the clear urine was tested for the presence of albumin. For this determination the urine was boiled and a few drops of dilute acetic acid added, only those cases being classed as positive in which the turbidity could be appreciated by directly (as opposed to diagonally) transmitted light. In case of doubt the nitric acid contact test was also employed. Tests for the presence of sugar were made with Fehling's solution. It was never found during pregnancy, but some few specimens obtained ten days postpartum gave a typical reaction.

The fact that a double test was only employed in doubtful cases might suggest that some cases classed as positive had given the reaction from the presence of nucleoalbumin, rather than serum albumin. Upon the suggestion of Dr. C. P. Emerson, in charge of the clinical laboratory of this hospital, I instituted a series of control experiments, using the heat test noted above and the nitric acid test, aided by the albuminoscope. Urine was obtained by catheterization during pregnancy from 25 different patients. In only one case where a turbidity was evident with the one test, did a distinct white line fail to appear with the other; while in a single instance where the reaction was classed as doubtful with the first test, the contact line was quite distinct after the instrument had been allowed to remain at rest for several minutes. This is in accord with the observations of Pajikull, who was able to demonstrate both serum and nucleoalbumin in every case where the latter was present during pregnancy.

TABLE II.—Comparison of results obtained from the examination of voided urine and that obtained by catheterization. The figures signify percentages, save in the uppermost line.

	Pregnancy.						Labor.			Puerperium.					
	Catheterized.			Voided.			Catheterized.			Catheterized.			Voided.		
	Total.	Ip.	+ p.	Total.	Ip.	+ p.	Total.	Ip.	+ p.	Total.	Ip.	+ p.	Total.	Ip.	+ p.
Totals regularly examined....	85	52	33	73	48	25	100	62	38	93	58	35	54	36	18
Negative....	54	54	54.5	53.5	58	44	10	5	18	62	62	63	44	42	50
Albumin (all cases)....	45	46	45.5	46.5	42	56	89	95	79	31	33	28.5	56	58	50
Albumin and casts.	14	7.8	24	4	.....	12	41	45	34	8.6	8.4	9	6	6	6
-Casts, but no albumin.....	.....	.....	.....	.....	.....	.....	1	...	2.7	6.5	5	.9	.....	.....	.....

Considering in the first place the albuminuria of pregnancy, it will be seen upon comparing Tables I. and II., that the general results obtained do not differ materially from those obtained in my previous investigation. The details, however, vary to some extent, and where this is the case I shall refer to the statistics in

TABLE III.—Shows results of similar investigations by other observers, in percentages, as before.

	Pregnancy.			Labor.			Puerperium.		
	Cases.	Alb.	Casts.	Cases.	Alb.	Casts.	Cases.	Alb.	Casts.
Möricke.....	.....	.....	.....	100	37	13	.....	.....	.....
Ingerslev.....	600	5.8	1.17	153	32	.....	.....	.....	.....
Flaischlen.....	1000	2.6	.....	537	16.9	.....	.....	.....	.....
Lantos.....	70	18.57	.....	600	59.3	.....	.....	.....	.....
Werth as authority	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lohlein.....	.....	.....	.....	100	37	.....	.....	.....	.....
Litzmann.....	.....	.....	.....	100	43	.....	.....	.....	.....
L. Meyer.....	1124	5.4	2	.....	.....	.....	.....	.....	.....
Fischer.....	175	50	.....	.....	.....	.....	.....	.....	.....
Pajikull.....	.....	.....	.....	110	100	.....	828	38	.....
Trantenroth.....	100	45.5	4	59	99	28	80	32	.....
Soft.....	314	17	5.4	306	28.4	.....	.....	.....	.....
Zangemeister.....	271	10.7	3.5	190	78.4	.....	.....	.....	.....
				312	78.9	.....	.....	.....	.....

Table II., unless otherwise noted. Albumin was found in 48.8 per cent. and 46.5 per cent. of the voided specimens in the two series, respectively, and in 46 per cent. when the urine was obtained by catheterization.

Table III. shows the result of similar investigation by other observers.

In investigations of this kind accurate results are obtained by the frequent examination of a moderate number of cases during pregnancy, rather than by the study of a large number of cases in which no regularity is observed. Of all the above, only the work of Lantos, Fischer and Trantenroth can fulfill this condition. Lantos, it is true, examined each case but once and failed to describe his technic. Trantenroth exercised the greatest care in the collection of his specimens, which he examined at frequent intervals, and found albuminuria during pregnancy in 46 per cent. of primiparæ and 45 per cent. of multiparæ, a result very similar to our own, except that the percentages are reversed, and in so small a number of cases this is a matter of little moment.

It would appear that the wide variation in the results obtained by the above mentioned observers can readily be explained, since in most cases there was but one examination of the urine and the figures were in great part taken from hospital records, which were probably lacking in uniformity, if not in accuracy. Thus, Zangemeister, who gave 10.7 per cent. as the frequency of the condition, noted that in 29 cases in which the urine was more frequently examined the percentage ran to 17. Saft allowed the urine to stand for 20-24 hours before examination, which would materially change many of its characteristics.

Our results as to the incidents of albumin in the urine of women immediately after labor are again more like those of Trantenroth than those of the majority of other observers, although the fact that we have had to deal with black and white patients may have modified our results to some extent. At the same time, it is satisfactory to note that the most recent observer, Zangemeister, whose specimens were obtained in a manner very similar to our own, has arrived at about similar conclusions. The marked increase in the number of cases in which casts were found in our material may be ascribed to the care taken in searching for them. Thus, Pajikull found that their frequency varied directly with the speed of his centrifuge and the time of centrifugation.

There are but few records of observations in regard to albuminuria during the puerperium. In both our series the figures 56

and 56.5 per cent. obtained from voided specimens are higher than that given for the catheterized series, 31 per cent., though in the latter the specimens were usually obtained four days earlier. This, I think, speaks for contamination of the voided specimens by the lochia and is fairly in accord with the records of Pajikull, who found 32 per cent. and 38 per cent. in his own cases and those from the hospital register, respectively.

It may be deduced from the foregoing tables that—

1. Albumin is noted in the catheterized specimens of urine from about one-half of all pregnant women, being equally frequent in primiparæ and multiparæ. On the other hand, albumin is found more frequently in voided specimens from multiparæ. This is in accord with the observations of Zangemeister and Trantenroth.

2. Casts (Table II) apparently occur with greater relative frequency in multiparæ, as noted by Zangemeister.

3. At the time of labor there is a marked increase in the incidence of albumin alone and of albumin associated with casts, the increase in each case being specially marked in primiparæ. As will be pointed out later, this may be due to the muscular work and increase of blood pressure during labor.

4. It is not unusual during pregnancy, labor and particularly the puerperium, to find casts present without albumin. While this is in accord with Fischer's observations, it must be borne in mind that the quantity of albumin may have been too small for easy recognition.

5. Albumin and casts are frequently found in the puerperium, but less often than in pregnancy. It is noteworthy that in no case was albumin present during pregnancy and absent at the time of labor, while there were only three cases showing casts in pregnancy and not at labor. On the other hand, two-thirds of the cases showing casts at the time of labor presented albuminuria during pregnancy.

Certain general facts were noted when considering the first series of cases (Table I.), which may be briefly stated as follows:

1. In 9 cases of threatened eclampsia and 25 others with definite eclampsia, albumin was invariably present. In the latter group casts were present in 22 out of 23 cases examined.

2. A case of hyperemesis gravidarum showed much albumin and many casts. This, with another unrecorded case, bears out Lindemann's observations as to its toxemic character.

3. The persistence of albumin and casts in the puerperium was most marked in those cases in which it had been noted during

pregnancy. Thus, of 77 cases, 34 showed the condition only at labor; in 19 others not positive before labor, it disappeared on the average in three and one-half days after labor; while of the remaining 24 cases in which the condition had been noted during pregnancy, $33\frac{1}{3}$ per cent. showed albumin as late as the tenth day.

4. Albuminuria was noted in 4 cases of abortion, 2 of which were due to syphilis and 1 each to typhoid fever and chronic nephritis. In no case was abortion associated with uncomplicated albuminuria.

5. Nausea and vomiting had been noted in 20 per cent. of the primiparæ and $33\frac{1}{3}$ per cent. of the multiparæ, who later showed albuminuria, and edema was present in one-third of the cases.

6. In 75 per cent. of the cases the first note of the condition was made within the last eight weeks of pregnancy, being most frequent two to four weeks before labor. This figure is possibly due to the fact that a large number of our cases enter the hospital at about this period of pregnancy.

Our cases (Table II.) were equally divided between the white and black races, 50 of each, thereby rendering possible a comparison which may be tabulated as follows:

TABLE IV.—Comparison of white and black primiparæ percentages.

	Pregnancy.				Labor.		Puerperium.			
	Catheterized.		Voided.		Catheterized.		Catheterized.		Voided.	
	W.	B.	W.	B.	W.	B.	W.	B.	W.	B.
Negative	50	58	50	64	3.5	6	68	55	36	47
Albumin	50	42	50	36	96.5	94	18	45	64	53
Albumin and Casts	4	11.5	4.5	?	52	39	3.5	13	9	.....
Casts, no Albumin .....	.....	.....	.....	.....	.....	.....	14	.....	.....	.....

TABLE V.—Multiparæ.

Negative	53	56	42	46	24	12	67	50	54	28
Albumin	47	44	58	54	76	82	21	44	46	72
Albumin and Casts	23	13	25	15	33	35	.....	19	.....	14
Casts, no Albumin .....	.....	.....	.....	.....	.....	6	11	6	.....	.....

It will be noted that while the percentage of primiparæ showing casts 10 days after labor is greater in the blacks than in the whites, a greater percentage of the white multiparæ show casts during later pregnancies. In the black multiparæ the casts become much more frequent at labor and tend to persist longer than is the case with the whites. In view of the usual shortness of the interval between pregnancies in the black race, one would expect, were the kidney condition commonly persistent, to find casts during pregnancy more frequently in the blacks than in the whites.

Puerperal infection, or intercurrent disease in the puerperium, appears to influence the duration of the albuminuria. Of 36 cases with no albuminuria in the puerperium, in only 3 did the temperature run above 100° , none of these 3 being a definite uterine infection. On the other hand, of 14 black patients showing albuminuria, 11 had rises of temperature above 100° and 2 others gonorrheal arthritis and subacute gonorrhea, respectively. In two other cases, one a definite puerperal infection and the other a severe burn, the albuminuria was unusually persistent. In multiparæ in whose cases there was no definite rise of temperature in the puerperium, the duration of the albuminuria postpartum seemed to vary with the time of onset during pregnancy; early incidence being for the most part associated with long duration. In only one case was albumin noted late in the puerperium where not of long duration in pregnancy, and this was after curettage for subinvolution.

The time of appearance of the albumin during pregnancy varied for catheterized and voided specimens; thus of 200 primiparæ in the voided urine of whom the reaction for albumin was positive, 15 showed the condition on entry into the lying-in ward and 3 others within a week of entry. This entry took place, in all but 6 of 62 cases, between the end of the thirty-fifth and fortieth weeks. In all these cases and in 11 of 13 multiparæ, it was observed that the albumin disappeared almost immediately; that is, it was not noted in the catheterized specimens till about the thirty-eighth week. This peculiarity could not be dependent entirely upon contamination of the voided urine, for in no cases were vaginal douches given, and it must be assumed that the regular mode of living, easily digested food, daily movement of the bowels and more particularly a daily warm bath had much to do with diverting a large portion of the toxic substances from the kidneys.

We have been unable to confirm Zangemeister's statements concerning the effect of the duration of labor, either upon the fre-

quency of albumin, or its amount when present. In 62 primiparæ the average duration of labor was $17\frac{1}{2}$ hours (whites, $22\frac{1}{2}$; blacks, $14\frac{3}{4}$), the second stage in each race averaging $2\frac{1}{2}$ hours. Of three cases showing neither albumin nor casts at the time of labor, one had a labor lasting 55 hours, while the other two (both blacks) averaged $16\frac{1}{2}$ hours. The average duration of those labors in which the patient's urine showed both albumin and casts as compared with albumin alone, varied, being somewhat shorter in the case of the white patients, somewhat longer in the case of the blacks.

TABLE VI.—*Classification of pelvis with respect to albuminuria.*

Character of Pelvis.	Negative.	Albumin.	Albumin and Casts.
Normal.....	8	65=89%	31=42%
Justo major.....		1	
Generally contracted.....	2	17=85%	8=40%
Generally contracted rachitic.....		4	1
Simple flat.....		1	
Flat rachitic.....		1	1

Table VI. substantiates the contentions of Meyer, Ingerslev and Saft that the character of the pelvis has no appreciable effect on the incidence of albuminuria. It was certainly not more frequent in our patients with generally contracted pelvises. In this connection it might be noted that while we have found albumin more frequently present during the labors of whites than those of blacks, the latter have contracted pelvises three times more frequently.

The average weight of the children was 3255 gms., and the following comparative table may be of interest:

TABLE VII.—*Showing relative average weight.*

GENERAL AVERAGE.							
Males, 3286.				3255.	Females, 3218.		
Primiparæ, 3237.	Multiparæ, 3419.				Primiparæ, 3171.	Multiparæ, 3269.	
Or with reference to color:							
Average, 3255.							
Primiparæ, 3213.		Black, 3107.			Multiparæ, 3329.		
White, 3331.	Black, 3107.				White, 3559.	Black, 2985.	
Males, 3385.	Females, 3264.	Males, 3132.	Females, 3050.		Males, 3610.	Females, 3527.	Males, 3164.
							Females, 2851.

It will be seen that the white are invariably heavier than the black children, and that the children of white multiparæ are heavier on the average than those of primiparæ, while the reverse is true of the blacks. The prevalence of syphilis and the consequent frequency of premature labor in black multiparæ may offer an explanation for this seeming anomaly.

If we consider the average weight with reference to the presence of albumin, the results may be tabulated as follows:

TABLE VIII.—*Average weights of children in patients showing varying urinary conditions.*

	General Average Weight.	Negative Cases.	Albumin All Cases.	Albumin Alone.	Albumin with Casts.
General.....	3255	3237	3229	3185	3282
Primiparæ	3213	3234	3211	3223	3199
Multiparæ	3329	3239	3266	3111	3476

It will be seen from reference to the above table that there was no definite relation between the weight of the children and the renal condition, though other observers, notably Zangemeister, have thought that the dystocia resulting from excessive weight of the children predisposed to albuminuria.

The average weight of the placenta varied between 16.5 and 17 per cent. of the weight of the corresponding child. The number and size of the infarcts found were invariably noted and we have been unable to note any definite relation between the grade of albuminuria and the extent of infarction. In none of our cases was the amount of albumin excessive, so that our observations do not necessarily invalidate the well known association of extensive infarct formation with marked albuminuria.

The relative average age of the patients was likewise considered, but bore no relationship to the renal condition.

The presentation and position of the children were also noted with a view of determining whether this was a factor in modifying our results. In vertex presentations the position had no effect on the frequency of albuminuria; and while albumin was noted in all, and casts in three of five cases presenting by the breech, it is obvious that the number of cases is too small to permit one to draw any general conclusions.

Albuminuria has been classified by Sir Samuel West as follows:

Pre-renal.....	{	With obvious cause (morbus cordis, etc.)	} Physiological
		No obvious cause	
Renal.....	{	No evident renal disease	
		Evident renal disease	
Post-renal.....		From the urinary passages.	

If to this one add Krehl's statement that "the urine of sound men shows albumin only with special reagents," one becomes restricted in classifying albuminuria of pregnancy to the last two classes; and the further limitation necessitated by the frequent presence in the urine of both granular casts and renal epithelium, suggests definite disease of the kidney. A positive statement as to the anatomic condition in cases of simple albuminuria cannot be made, as none of our cases came to autopsy. Other observers have been more fortunate. Thus, Tarnier says that an alteration of the kidney is invariably present if the patient has had albuminuria. Bartels, and following him, Hofmeier and Ingerslev, asserted that the condition was a true acute parenchymatous nephritis, and the last named backed his assertion with records of eight autopsies. Flaischlen contended that the condition was a fatty degeneration of the parenchyma with subsequent cortical anemia. Hiller suggested fatty infiltration as the more proper description of the condition. Virchow had already noted a similarity of changes during pregnancy in the kidney, liver and spleen, and had suggested that the condition was more comparable to an anemia than to an exudative inflammation.

To von Leyden, however, is due the credit of distinguishing between two conditions which were previously confused. He divided the cases into two groups: (a) true nephritis (Schwangerschaftsnephritis) and (b) the kidney of pregnancy (Schwangerschaftsnier); the former showing a typical acute parenchymatous change with exudate, the latter a large pale kidney, apparently the result of a degenerative process which, in some cases, was so pronounced as to suggest the action of a corrosive irritant. Clinically, the two conditions were to be differentiated only by the severity of the symptoms.

Our cases undoubtedly belong entirely to the latter class, and indeed a true nephritis characterized by general symptoms and the presence of blood in the urine seems a rare condition. In 1,500 cases in our own wards there has been but one such case. In

this case there was no history of previous disease, and the patient aborted at the fourth month. This is of great interest, in that pregnancy is given as one of the most frequent causes of nephritis, and the question at once arises whether the kidney of pregnancy may be the starting point for a chronic nephritis. Hofmeier has called the condition "an acute, chronic nephritis," but opinion is about equally divided. We have noted that puerperal infection aggravated the condition, and in some cases we have been obliged to allow women to leave the wards whose urine still showed albumin and casts. One of these cases (she had had no renal disorder during pregnancy) died within four weeks of discharge, with the definite lesions of nephritis.

Suggestions as to the cause of the condition have been numerous, and may be divided into two large classes; on the one hand theories of mechanical pressure, on the other those based on quantitative or qualitative alteration of the blood. That the albuminuria of labor may be due in a large measure to the effect upon a diseased kidney of the rhythmic alteration in blood pressure (Cook and Briggs) cannot, I think, be questioned, and it is therefore with the causes of albuminuria during pregnancy that we are chiefly concerned. Leyden had insisted that the changes in the kidney were comparable to those observed after fevers, etc., but the idea that altered abdominal pressure was the true etiological factor was ardently upheld by many observers, particularly Moricke and L. Meyer. The latter contention was based on the supposed greater incidence of albuminuria in primiparæ, particularly in those with generally contracted pelves, twins or hydramnios. Our observations, however, along with those of Fischer, Meyer and Ingerslev, show that these factors are of slight importance. They too, with the fact that the pathologic condition is not a passive congestion, speak against theories of pressure on the veins, as well as the ingenious idea of Johnson that the limitation of lung expansion results in intoxication.

Ingerslev suggests that much of the albumin came from the urinary passages, but the frequent association of granular casts indicates an origin higher up.

Halbertsma of Utrecht sought the cause in pressure on the ureters. Dilatation of the ureter has been frequently noted at autopsies on eclamptics, but while this condition was unilateral, the renal condition was bilateral (Saft). Experiments have shown that ligation of the ureter will result in albuminuria, but several days are necessary to produce the result, and the anatomi-

cal picture is not identical with the kidney of pregnancy. In some 10,000 admissions on the gynecologic side of this hospital, there were over a dozen cases of dilatation of the ureter from tumor pressure, but only in a single case were albumin and casts noted, and the latter were of the hyalin variety.

Cohnheim suggested as a cause a reflex spasm of the renal vessels due to stimulation from the uterus, the condition being analogous to that observed in lead poisoning. There is, however, no definite evidence in favor of this view.

It would seem to us that the theories of increased intra-abdominal pressure lose sight of the fact that when the albuminuria is most frequent, *i.e.*, the last two or three weeks of pregnancy, is just the time when the pressure has been undoubtedly decreased by the descent of the head into the pelvis. This fixation of the head might tend to support the theories of pressure on the veins or ureter, were it not the fact that the condition induced is not identical with the results of such pressure.

Later observers have for the most part abandoned the pressure theories and sought to explain the condition by changes in the circulating blood. French observers, notably Chambrelent and Tarnier, working with cases of eclampsia, held that during pregnancy the blood serum was more toxic, while the urine was less so than normally. The work of Stewart has done much to modify such teachings, but the question is, as yet, by no means settled. Möricke called attention to albuminuria in states of hydremia and chlorosis, and Lantos ascribed all albuminuria during pregnancy to the former condition, which was supposed to be normal during pregnancy. Gilbert has also noted the association of chlorosis in pregnancy with albuminuria. Unfortunately, the most recent work on the condition of the blood shows that hydremia is far from being the normal condition during pregnancy.

Early last year Scholten and Veit, following along the lines of Ehrlich's side-chain theory, attempted to show a causative connection between the migration of syncytial cells and the condition under consideration. Their work proved nothing further than that the injection of portions of human placenta into the peritoneal cavity of rabbits (provided the technique is sufficiently good to prevent immediate death) will result in a transient albuminuria, and has already been discredited by the observations of Liepmann.

Whether the blood serum of a pregnant woman is more toxic

than usual or not, there can be little doubt that the presence of a living fetus is accountable for the presence in the circulation of certain products, causing headache, nausea and vomiting, and even hyperemesis gravidarum, with accompanying changes in many of the abdominal organs. It has long been known that the eclamptic attacks usually cease with the death of the fetus, and Trantenroth has demonstrated the disappearance of the albuminuria under the same circumstances. The fact that the condition of the patient is almost invariably relieved by stimulation of the excretory organs other than the kidney, would appear to be the strongest argument in favor of an intoxication; while the whole train of symptoms bears a striking analogy to those induced by other toxins, notably as in scarlet fever (Albutt). The relative incidence in primiparæ and multiparæ may be due to an acquired immunity. Olshausen has objected that the condition of toxemia is secondary to the kidney condition, but for this assumption there is no definite proof, and the fact that in some toxemias other organs than the kidney may show the most marked changes is a definite argument against his contention.

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CHORIO-EPITHELIOMA MALIGNUM; REPORT OF A CASE IN GOOD HEALTH FOURTEEN MONTHS AFTER OPERATION.¹

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(With one illustration.)

Mrs. C., age 31 years. A remote history of tuberculosis on the maternal side. Menstruation began at fourteen; was regular, normal in amount, and painless, and continued so until July, 1902. In 1898 she was thrown from her bicycle, the handle tearing the perineum. This laceration was repaired and the patient was in bed for three weeks. She married Feb. 26th, 1902. At the time for normal menstruation, July 5th, she flowed excessively. July 13th there was profuse flowing during the night, and products of conception were expelled. July 27th profuse flowing came on suddenly with the expulsion of a blood-clot. During the following four days the temperature ranged from 101 to 103.5. The os uteri was found patulous and curettement was performed by her mother, a practising physician. The patient remained in bed about three weeks and made a fair recovery.

Menstruation began Aug. 25th, was normal in quantity and duration and was painless. She menstruated normally in September and October; she failed to menstruate in November, suffering morning nausea, and thought herself pregnant. She flowed freely and continuously Dec. 1st and 2d. After this her health improved and she added to her weight. She failed to menstruate in January and February and again thought herself pregnant.

¹Read before the Section on Obstetrics and Gynecology of the Michigan State Medical Society, May 25, 1904.

March 8th she had a chill followed by sore throat; temperature 101. On the afternoon of Mar. 12th she began to flow so profusely that by 4 P.M. she was reduced to the point of fainting. Strong expulsive pains now began and continued until 10 P.M., when a piece of mole tissue four inches long and as wide as two fingers was expelled and a similar piece lodged in the cervix. This was followed by exhaustion and there were no more uterine contractions. She slept until morning. On Mar. 14th her mother curetted the uterus, removing pieces of tissue together equalling in size a man's fist and composed of cysts with pedicle attachment, varying in size from a pin-head to that of the end of the little finger. There were hundreds of these cysts embedded in a fibrinous mass. Bright red blood suffused the whole as it was removed. There was no odor. The uterus was about the size of one four months advanced in pregnancy. Her temperature was 101 to 103. Active flowing continued. Mar. 21st curetting was repeated and more than a handful of tissue removed. After this the temperature became normal; she was permitted to get up soon and for about a week went downstairs. Then began occasional profuse gushings of blood, with intervals of hours between, and she began to lose color rapidly. On the morning of April 6th, she was curetted again. Profuse hemorrhage during the curettement compelled immediate packing of the uterine cavity. Dr. Metcalf was first called to the case on that evening and from the history was led to make a diagnosis of chorio-epithelioma and advised microscopical examination of the tissues previously removed. The next morning a stream of blood followed the removal of the packing from the uterine cavity, and a strong necrotic odor pervaded the room. A report upon the tissues examined at the clinical laboratory gave support to his suspicions of malignancy. Blood-examination showed the hemoglobin reduced to 50 per cent. The patient was at once sent to Harper Hospital where the following morning Dr. Metcalf performed an abdominal hysterectomy.

Her recovery was uninterrupted and the improvement has continued. She says that she has attended all her household duties since five months after the operation. At present, nearly fourteen months after operation, she is apparently enjoying perfect health.

Chorio-epithelioma is a neoplasm, varying in malignancy and originating from chorionic epithelium or its parent trophoblast. It forms a distinct class, apparently differing from the carcinomata and sarcomata. It is generally related to a more or less

recent pregnancy, but some investigators seem to have demonstrated that the characteristic tissue may be found independent, as for instance in certain teratomata of the ovary or even in corresponding tumors of the testis. Of the theories to account for the occurrence of such a tissue in these tumors it is foreign to our purpose to make mention. It is worthy of notice in passing that here lies an interesting bone of contention among the pathologists.

The attention of the scientists was called to this kind of new growth about fifteen years ago. After some controversy among those who were actively working upon the subject, the London Obstetrical Society, in 1896, appointed a commission to settle if possible the classification of these tumors. The verdict of the commission was that they were nothing but sarcomata of the uterus and it practically denied that they had any necessary relation to pregnancy. The course of scientific thought has ever since been running farther away from the dictum thus laid down.

In the General Hospital in Vienna from Feb., 1901, to Aug., 1902, there were found in 2,700 autopsies seven cases of this condition. Marchand, in 1898, had applied the term chorio-epithelioma to it. Veit in 1901 published an article, in which he attempted to account for the condition on the theory of its springing from the deported fragments of chorionic tissue escaping into the maternal blood-vessels. This fact has attained to a quite general acceptance, but since the deported fragments are observed in normal, as well as in pathological conditions his theory is held insufficient. Such fragments are usually absorbed in the maternal tissues but it is possible to conceive that a tumor might arise in a more or less distant part if the normal degeneration were not undergone. That there is metastasis by way of the blood-vessels in the presence of the already developed malignant process there can be little doubt.

It is safe to say that to-day the work of Marchand upon the pathology of these growths is given the greatest weight, although the English commission did much to delay its recognition. The previous work of Langhans upon the histology of the chorion and especially the work of Peters and others upon the early stages of the development of the ovum, during its period of implantation, have given the ideas of Marchand an ample support. By this view, at latterly held by Marchand, the neoplasm is made up entirely of tissue arising from the fetal ectoblast instead of the maternal mesoblast, as the English commission would have had it. This fetal ectoblast, or trophoblast, gives rise in the developed chorion

to the layer of what are known as Langhans' cells. These lie upon the stroma of the villus and probably represent the most highly vitalized tissue in the chorion. From them, by a process of differentiation, it seems that the outer syncytial covering of the villus is derived. These so-called cells of Langhans are then the ones which we find as the invaders of the uterine structures and the component cells of the metastases. In both primary growth and metastases, the syncytial derivatives, corresponding to those described as in the villus covering, are found.

The diagnosis in many cases must be difficult. Even the microscopic determination cannot be taken as absolute, since there is such a variety of appearances within the normal. It must first be recognized that the tissue from which this growth develops is, according to the accepted view of Peters, essentially infiltrating, and even within normal limits to a degree malignant, from the maternal standpoint. In other words the primitive trophoblast in its normal activity and the derivative Langhans' layer in the condition of chorio-epithelioma malignum are, according to this view, similar in vital characteristics as well as in morphology; the real difference between the two arising in the absence of a purpose in the vital activity of the latter, as is true of the growth of any malignant neoplasm. This difference, it will readily be understood, does not strikingly manifest itself in the lower grades of malignancy. This is not saying, however, that the microscopic examination is not useful and even imperative. The observations thus made should, in the light of the clinical features of the case, lead to a fairly positive diagnosis in most cases. In the simple hydatidiform mole the overgrowth of the stroma of the villi and its subsequent degeneration, so as to form the characteristic little pedicled cysts present in such numbers, are attended by a moderate overgrowth of the chorionic epithelium. This evidently was the condition in the earlier part of the course of the case we present. As malignant characteristics are assumed by the new growth, the hyperplasia of the stroma is overshadowed by that of the epithelial cells, and the striking features become the number of cells of Langhans, syncytial giant-cells, and deep-staining "syncytial masses," in groups or scattered, upon the surface or more or less deeply infiltrating the uterine structures. In those cases where the metastases are accessible for examination, the finding of the chorio-epithelial cells would leave usually no doubt of the character and source of the primary trouble.

In order that the pathological examination may be made to the

best advantage, all the tissues obtained should be preserved and placed as early as possible in the hands of the microscopist.

In any case where a hydatidiform mole has been passed, the case must be looked upon for a considerable time as potentially one of the malignant type. A good routine plan that has been suggested for such cases is to watch them carefully for a period of two weeks when, no signs of a malignant process being apparent, a thorough curetting of the uterus is performed and a careful search for actively infiltrating proliferation made. This delay allows time for the absorption of those remnants of chorionic tissue which, though benign, might earlier cloud the diagnosis.

In the event of symptoms of an already developed malignancy, irregularly repeated profuse hemorrhages and rapidly developing anemia, there is no time to be lost. Disregard the dangers of hemorrhage to such an extent as to be able to get a specimen for examination, pack, and get the earliest report possible from the laboratory. In no class of cases would the value of the freezing microtome be of greater service, permitting your examination while you wait.

In considering the diagnosis from the clinical side, we may note that the average age of these patients falls at the time of greatest sexual activity. It is given by Teacher, in a study of nearly two hundred cases, as 33 years, an average differing from that of either carcinoma or sarcoma. It is true that a number follow delivery at term yet the vast majority follow abnormal pregnancies. The histories show preceding good health in many cases. Miscarriage followed by the formation of a hydatidiform mole is always a suspicious train of events. Statistics show that from 10 to 16 per cent. of cases of mole are followed by malignant manifestations, and about 50 per cent. of cases of chorio-epithelioma follow hydatidiform mole. Sudden severe hemorrhages, irregularly recurring are the ordinary picture, but in some cases this has not figured conspicuously. There is apt to be an offensive discharge between the recurring hemorrhages. Rigors with more or less fever are common. Anemia and cachexia attend the appearance of the malignancy and progress rapidly. Cough or hemoptysis in any such case should arouse the suspicion of a pulmonary metastasis and is a thing which Teacher believes should be borne in mind in attending any recently delivered woman. Failure to be relieved of hemorrhage or to take on a general improvement after curettement would bear a serious significance.

Even with radical operation the general prognosis is bad, but

that it is not so hopeless as some have been led to believe is evidenced by the peculiar, unaccountable course of some cases reported. An early hysterectomy will save a large proportion of those in which a positive diagnosis of malignancy can be made and confirmed. Cases are on record in which, even after the development of metastasis, the removal of the metastatic growth and the emptying of the uterus were followed by an apparently permanent return to health. On the other hand it has happened that the uterus showed no sign of involvement in the malignant process, while the secondary growths developing by metastasis a few months after pregnancy were rapidly fatal. And again there are cases in which the primary growth has been removed even after metastasis was established and recovery has followed.

Of Teacher's 188 cases collected, 99 had been subjected to radical operation and, of these 99, there were 63.6 per cent. of recoveries, or 34.2 per cent. of the whole number of cases. Two-thirds of the successful operations were performed within three months of the appearance of symptoms.

We may consequently conclude that early operation and removal of the primary growth are the only safe treatment and that metastasis is not a contraindication to operation.

PATHOLOGICAL REPORT.

1. Uterine curettings from case of Mrs. C., taken March 14th but not coming to our hands until April 10th, 1903. A loose mass of tissue chiefly made up of small cysts, some hanging by a pedicle attachment, some embedded in a fibrinous mass; each more or less transparent and collapsing under the touch. On section these cysts are found to be in various stages of degeneration, from the small growing villus, with comparatively healthy stroma covered with syncytium to considerable thickness, to the completely formed cyst in which the stroma has entirely disappeared except around the periphery and the syncytium has all but entirely disappeared. In all villi in which the stroma has begun to soften and become transparent at the center, the syncytium shows the absence of the round cells of Langhans. The "syncytial masses," with their heavily-staining nuclei, remain often as the most enduring among the degenerating tissues, and a thin layer of syncytium is usually to be found above even the completely formed cyst. This specimen is the tissue of a hydatidiform mole. From this alone the case could not be declared ma-

lignant. (The curettings of April 6th were reported to us as malignant.)

2. Uterus and appendages removed April 8th, 1903. Uterus was 11 cm. by 6.5 cm. by 5.5 cm. in size, and when received was packed with gauze, which, being removed on opening the uterus, left a foul smelling, dark grayish-brown surface on the posterior and superior walls of the canal extending around upon the anterior surface somewhat more to the right. On cutting into the uterine tissues, they were found soft and spongy in consistency



The section shows a syncytial giant-cell, numerous deep-staining "syncytial masses," and many masses of pale-staining Langhans' cells.

over the above-described area for a depth of from 5 mm. to 10 mm.; but elsewhere and at greater depth the gross appearance and consistency more nearly approximated the normal. Microscopic examination showed a marked infiltration of the uterine tissues by the cells of Langhans extending well into the musculature. At the surface were left remnants of villi of the mole with their stroma in various stages of degeneration, but the epithelium was in active state of proliferation. At the surface of these villi were to be seen perfect transitions from the cells of Langhans to the mature syncytium. Wandering among the uterine tissues beneath

the surface were the characteristic syncytial masses and giant-cells.

This is undoubtedly a chorio-epithelioma malignum. The accompanying photograph, taken by Dr. P. M. Hickey from a section through the uterine tissues near the fundus, shows the essential characteristics of the growth.

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SYMPHYSIOTOMY IN PERSISTENT MENTO-POSTERIOR (FACE) PRESENTATION.¹

BY

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SYMPHYSIOTOMY to-day is so rarely the operation of choice, and the indications for its performance have become so few, that it seemed to me of interest to report a case in which I chose it to facilitate delivery of the child in persistent face presentation with the chin in the hollow of the sacrum. Here, it is evident, is a very positive indication for its performance that has not often been followed, as a careful search of the literature of the subject shows but very few reported cases. The only alternative operation is craniotomy, and with the slight additional risk to the mother

¹Read before the Illinois State Medical Society at its annual meeting, May 19, 1904.

involved in a properly-performed symphysiotomy, the former should not be considered in the living child if the consent of the mother to the performance of the latter can be obtained. Few mothers would prefer to have the living child surely sacrificed in preference to taking a slight additional risk to themselves, and probably, or at any rate possibly, saving its life.

My case is briefly as follows: Mrs. J. W. M., aged 35, a primipara, after a very comfortable gestation of nine months, had an escape of liquor amnii at 6 A.M. on December 6th, 1903, which occasioned my being summoned. I found no evidence of labor or dilatation of the os, but pretty complete loss of the amniotic liquor. The pelvis was normal in its dimensions with a conjugata vera of 11 cm. Labor pains began about 2 P.M. and were from that time almost continuous and so severe that small amounts of chloroform were given by inhalation from time to time as the labor progressed. After two hours it could be determined that the child's brow was the presenting part and as dilatation was tardy, some aid was given by manual method. No change could be made in the child's position, either by the "Volland" method of pulling the chin forward or the Baudelocque method of flexion, and with the continuance of labor we had an impacted face presentation to deal with, the chin in the hollow of the sacrum. A very moderate traction with forceps soon showed that delivery by that means was impossible. At 4 A.M., in consultation with Drs. Joseph Robbins and Ernst Zimmermann, it was decided, the patient consenting, to have her removed to Blessing Hospital for a symphysiotomy.

She was removed in an ambulance to the hospital and at 7 A.M., after preparation of the patient, a symphysiotomy was done. An incision three and five-tenths cm. in length was made over the symphysis in the median line, and an attempt made to sever the articulation with a strong scalpel. Owing to what, at the time, was supposed to be ossification of the joint, this was not possible and a small metacarpal saw was used for severing the bone, the subpubic ligaments being afterwards cautiously dissected from the bone with the scalpel. A metal catheter in the urethra and index finger in the vagina were used as guides. After division of the symphysis which was fully five cm. in depth, the patient was brought to the edge of the table in the lithotomy position and the thighs abducted and supported by Drs. Robbins and Zimmermann, giving a separation of six cm. at the symphysis. I then applied the forceps and with some difficulty delivered the child

which was living but so cyanotic and exhausted that despite efforts at resuscitation, it survived but thirty minutes. No perineal laceration occurred. The child's head was less than ten cm: in its bi-parietal diameter and delivery could easily have occurred in this mother but for the faulty position of the child. The after treatment consisted in suturing the suprapubic wound, application of aseptic dressings. The pelvic sling advised by Ayres where his hammock bed is not available, was used after the third day, this permitting better care and cleansing of the patient, and producing approximation of the bones. Callus was thrown out and solid union occurred by the twenty-eighth day. During the patient's convalescence and just as she was ready to leave the hospital at the end of the fourth week, she contracted a suppurative tonsillitis of severe type which was followed by a prolonged septicemia and later nephritis which necessitated her remaining in the hospital four weeks longer. Since February 15th she has been about and has now quite recovered her usual health. Her gait has been quite unaffected by the operation.

While I do not in general favor symphysiotomy as an operation of choice, in moderately contracted and deformed pelves to permit delivery of the child at term, I think that in unchangeable face presentations mento-posterior position, where the only alternative is craniotomy of the living child, we have a positive indication for its performance, provided the patient is willing to take the slight additional risk involved. Still it does not seem to have been done in these conditions often. Edgar says in his recent work on obstetrics, "in the past most authorities agreed that perforation is the indication of necessity even in the living child. Symphysiotomy has been suggested as applicable to this complication. I do not know that it has ever been applied." The American Text-book of Obstetrics, and also those of Drs. J. C. Webster and Whitridge Williams, coincide with Edgar's opinion, but give no record of any clinical cases. The only literature bearing on the subject with report of cases that I could find by the aid of the Index Medicus, is the paper by Wallack on "Symphysiotomy in persistent brow presentations," published in the *Bulletin of the Paris Society of Obstetrics, Gynecology, and Pediatrics*, for January, 1902. Wallach's study covers nineteen cases, all of them occurring in Pinard's clinic in Paris. His conclusions are as follows: Dystocia caused by persistent frontal presentation, is very grave, when plainly distinguished from *transitory* presentations of the forehead. In nineteen cases, parturition was spon-

taneous in two cases only; the uterus was lacerated twice, the vagina once; two women died, as well as eleven children. None of these cases were treated by symphysiotomy, but seven since 1894. Dystocia from persistent presentation of the forehead was observed when the pelvis was normal and when dimensions of the fetal head were not increased. Eight times the conjugate diameter was more than 10 cm. Four pelves were entirely normal. In fourteen out of the nineteen cases the pelvis was considered normal and only four times was the conjugate diameter more than ten cm. The bi-parietal diameter of the head attained 10 cm. in but one instance. These facts, Wallach says, prove that it is the defective presentation of the head that causes the dystocia, much more than the respective dimensions of the head and pelvis. As regards the results in Wallach's nineteen cases, they are as follows: in the twelve cases not treated by symphysiotomy, there was a maternal mortality of two, or 16 per cent., the fatal results having been due in one instance to rupture of the uterus after use of the forceps, and in the second, to uterine rupture following version. Seven of the children died, or 58 per cent. Study of these cases shows the danger of manual intervention, of reduction and the uncertainty of the result when one begins with forceps or a version in these cases. Of the seven cases treated by symphysiotomy, there was no maternal mortality, and a fetal mortality in two cases, or 28.5 per cent. These figures are certainly indicative of the superior results attained by the use of symphysiotomy in cases of this kind.

While it may not be becoming in one who has only had one case, to express opinions as to the technique of the operation I will venture to express some for the purpose of eliciting discussion. My operation, though made in the median line, was evidently an extra-median symphysiotomy, the joint being most frequently found, according to those who have carefully investigated the matter, to one side or the other of the median line. What we supposed to be the ossification of the joint was the result of our not having found it. This, however, I do not regret, as I believe that better union resulted from the division of the bone, than from an incision through the joint. If it ever became necessary for me to do this operation again, I should choose the extra-median symphysiotomy as done by Gigli, and make use of the Gigli saw. Van de Welde, who writes of this operation in the *Wiener klinische Wochenschrift* for September, 1903, says it has only been performed twelve times up to April.

1903, all the mothers recovering with perfect gait. The Gigli saw was used in all these cases according to the method described by Gigli in the *Bulletin* of the Italian Society of Obstetricians and Gynecologists. He makes an incision from the spine of the pubis obliquely downward to the point where terminates the pubic ligament. It is not necessary to expose the bone completely. The upper edge between the two recti is opened up, and a strong needle is inserted beneath the bone and passed downward, guided by the finger in the vagina, until the tip emerges at the lower angle of the incision in the soft parts. A thread is passed through the eye of the needle and the wire saw is drawn through beneath the bone by this means. No vessels will require ligating.

In the absence of the hammock suspension bed described by Ayres, Vol. 36, *AMERICAN JOURNAL OF OBSTETRICS*, I can commend most heartily a simple pelvic sling suspended from the ceiling and attached to a compound pulley such as is used in suspending patients for the application of the plaster of Paris jacket. Indeed, in the after care of the patient, I deem such suspension almost indispensable to her comfort and to facilitate the work of nursing.

134 NORTH EIGHTH STREET.

POST-OPERATIVE INTESTINAL PARESIS. A FURTHER CONTRIBUTION TO ITS PREVENTION.

BY

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It was my privilege to publish in this journal, in the April issue of 1904, a preliminary report of my work in the prevention of post-operative intestinal paresis, and also incidentally post-operative intestinal adhesions, and as many highly esteemed surgeons and gynecologists have interested themselves in my method of procedure sufficiently to give it a trial, the inevitable and much to be desired result has been several questions, the answers to which could not be embodied in my preliminary report. The object, then, of this further report is not alone to give expression to the additional facts acquired by a wider experience, but also to embody the answers to the questions propounded by others arising out of

their varied experiences. It is far easier in the limited space at my command to embody the points involved in a homogeneous text than to take up the questions seriatim, and I shall therefore follow this course.

The question of most frequent and insistent recurrence and the one undeniably most important, and from a perusal of my former report, most completely justifiable, is as to the behavior of the bowels during the first few days after laparotomy in cases in which the eserine has been used.

To review briefly the *modus operandi* of eserine salicylate in preventing intestinal paresis it is remembered that belonging, as it does, to the group of spinal depressants it lessens, or inhibits the inhibitory impulses ordinarily sent to the intestinal musculature by way of the splanchnics as a reflex result of peripheral irritation. Also that, through its powerful stimulant action either directly upon the muscular fibers of the intestine or the nerve terminations therein, the plexuses of Auerbach and Meissner are saved a vast amount of work, reaching in cases of actual paresis complete exhaustion.

Such being the therapeutic action of eserine it is plainly evident that the administration of a full dose, gr. $\frac{1}{30}$, or even a little more in women giving a marked history of intestinal atony, of eserine salicylate at the earliest possible moment after the opening of the abdomen, is going to actually prevent intestinal paresis and leave the muscular and nervous mechanism in practically the same condition as obtained before the operation.

To achieve this result in the highest degree the eserine must be administered at the earliest possible moment. To this end I now make the first step in every laparotomy a thorough exploration of all areas to be involved in the operation, and if it seems probable that the operation will be completed without doing serious injury to the muscular tunics of the intestine the eserine is administered immediately, often before the cavity has been opened more than two to five minutes. This early administration is important because, from the earliest moment of exposure and manipulation of the intestines reflex inhibition begins, which is immediately combated by the intrinsic plexuses, paresis only reaching completion upon the utter exhaustion of these latter. Therefore, of course, the shorter this battle can be made the less loss on both sides.

Returning now to the post-operative conduct of the intestines under the use of eserine, my constantly broadening experience,

together with that of many other surgeons who have been kind enough to inform me of their results and views, leads me to expect the bowels to behave exactly as though the abdomen had not been opened. In other words I note a great similarity in the conduct of the bowels after laparotomy and after plastic gynecologic operations in no wise involving the peritoneal cavity.

It is a fact, too well recognized clinically to require any experimental demonstration, that if a well person, or one ill with any extra-abdominal lesion is subjected to a thorough catharsis, the intestinal lumen thoroughly cleared, and is placed in bed on either a liquid diet poor in indigestible residue, or for a day or two upon no diet at all, there will be no bowel movement unless produced by some powerful hydrogogue or saline cathartic. Hydrogogues and salines will certainly produce catharsis in a patient in whom there is still sufficient circulatory vitality to accomplish absorption, and in whom the intestine is not absolutely obstructed or paralyzed. This is true because, by determining liquids from the patient's own blood-vessels into the intestinal lumen they themselves furnish the material which peristalsis may ultimately expel. But such a procedure, to use the mildest possible expression, would seem inexpedient in a patient suffering from surgical shock, narcosis, and in many instances, hemorrhage, together with a limited ability to ingest liquids. It would certainly appear more rationally scientific to leave the great nutrient circulating medium of the entire organism in the nearest possible approximation to its norm.

Granted that the bowels are to act exactly as in extra-abdominal operations, we should expect, owing to the peristalsis unquestionably stimulated by the eserine, to have any marked accumulation of fecal matter not removed previous to operation, as for instance, in emergency operations, promptly expelled after operation. Many cases, one of which was reported in some detail in the former paper, confirm this view, the bowels moving freely and easily in from twelve to forty-eight hours after the return of the patient to her bed.

On the other hand, when the bowels have been adequately prepared, an absence of movement during the same period is abundant testimony to the thoroughness of the preparation. During this interval both nurses and surgeon should be eternally vigilant and watch constantly for signs and symptoms of intestinal paresis, or adynamic ileus. This is true for several reasons: First, because eserine, like any other drug throughout the pharmacopeia,

may occasionally fail to manifest the expected therapeutic action: (a) because of poor preparation; (b) because of loss of strength through being kept too long; (c) through idiosyncrasy on the part of the patient. Secondly, because by far the most common cause of incoercible, fatal post-operative paresis is sepsis and no method of treatment can wholly overcome the results of accidental infection or of unclean, careless or slovenly technic. Thirdly, because in certain cases, especially where drains have been used or large, raw surfaces left, obstruction may supervene, which is mechanical, and not merely parietic.

Should signs and symptoms of adynamic ileus or obstruction supervene, they would be those ordinarily observed where no eserine had been given, and the treatment would in no way differ in a patient who had received eserine from that now ordinarily employed in such cases and too well known to justify description here.

After eserine, in my personal experience, and that of other Boston, New York, Philadelphia, and Cincinnati surgeons, the patient is surprisingly comfortable, usually vomits only once or twice, if at all, has a minimum of thirst and little or no abdominal pain. There is entire absence of abdominal distension, the abdomen not infrequently appearing even slightly retracted.

Of course, body waste intended for intestinal elimination accumulates in the bowel, even though the patient is on starvation diet, as is often the case for a few hours after laparotomy, and it is therefore wise to observe carefully any indications for a bowel movement which would be observed in any extra-abdominal case, and if such special indication arises, a saline, with or without calomel, may be given, or an enema may be employed. Otherwise, in the entire absence of intestinal or gastric symptoms the bowels may be trusted to move upon the sufficient accumulation of waste. But these indications seldom occur, and never until the patient has sufficiently recovered to be abundantly able to ingest more than sufficient liquid to compensate the depletion by the saline. Personally, I begin on the evening of the day succeeding operation, and administer a tablet containing aloin, gr. $\frac{1}{3}$, ext. belladonna, gr. $\frac{1}{8}$, strychnia sulphate, gr. $\frac{1}{60}$, and eserine salicylate, gr. $\frac{1}{100}$ each night. I prefer this to salines, because it keeps up a more active peristalsis.

In my former paper I laid considerable stress upon audible peristaltic rumbling of the bowel. The occurrence of such borborygmus is, of course, a comfort to the surgeon because it settles,

often within the first hour after the patient's return to her bed, the entire question of intestinal paresis, but experience shows that, in accordance with the entire normal behavior of the bowel, it is often no more heard than it is in any extra-abdominal case. Briefly: If heard it is conclusive proof of the existence of active peristalsis, but if not heard it means absolutely nothing.

It is useless reporting confirmatory cases here, as they would merely constitute a duplication of those in the former paper. Suffice it to say that the method is now in daily employment at the hands of critical surgeons, with results sufficiently gratifying to lead them to signify their approval to me, for which I heartily thank them, and that since its adoption I have had no single occasion to worry for even an hour over post-operative intestinal paresis. One thing only I would particularly ask, and that is, that before adopting the use of eserine surgeons would learn thoroughly its physiological action, in which my first paper will aid them somewhat, and that they would sufficiently familiarize themselves with their source of supply to avoid the use of a deteriorated preparation. Eserine salicylate should *never* be kept in solution, because under such circumstances it loses a large part of its therapeutic action on the intestinal musculature. Oculists assure me that solutions which have changed to a marked yellowish color will still contract the pupil, but such solutions are absolutely unreliable, and therefore dangerous, for subcutaneous use in our present connection.

386 COMMONWEALTH AVENUE.

A CASE OF EPITHELIOMA OF THE VULVA.¹

BY

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(With two illustrations.)

PRIMARY epithelioma of the vulva occurs rarely, yet its early recognition and treatment are of great importance. A year ago, R. Peterson reported four cases of this disease which had been under his care, two of them in the University of Michigan Hospital. I desire to add one case to that number, making a total of three cases which have been operated upon at the hospital since 1901.

The case is as follows: Gyn. No. 744, entered the University Hospital December 10, 1903. Patient is fifty-three years of age, has been married thirty-two years. Her family and personal history are practically negative. Menstruation appeared at the age of fifteen. Patient passed through the menopause ten years ago. She has borne two children, the elder being twenty-eight and the younger twenty years of age. Puerperal history is negative. Appetite and digestion are good, bowels and bladder are negative.

The presence of malignant disease first manifested itself in the latter part of June, 1903, six months prior to the patient's entrance to the hospital. At that time she noticed an itching and burning sensation on the inner side of the right labium minus. In October, 1903, an abrasion appeared about 1 millimeter in diameter and soon after the patient noticed a tumor about the size of a hickory nut at the site of the original lesion. This was not painful, although it was sensitive on pressure. The growth continued to increase in size; and examination the day after the patient's entrance to the hospital showed the following:

The vulva is the seat of the growth which arises abruptly from the inner aspect of the right labium minus. It projects above the edge of this labium about 1 centimeter. It extends over the vestibule just to the edge of the meatus. Above it involves the tip of the clitoris and just approaches the left labium minus.

¹Read before the Michigan State Medical Society at Grand Rapids, May 25, 1904.

It extends downwards on the right side about 4 centimeters. It is 2 centimeters wide at its widest part. The surface is covered with rather coarse granulations, with deep ulcerations in the center. There is a purulent grayish white film over most of the surface. The right edge is indurated and very sensitive. The prepuce of the clitoris is very much swollen and edematous. There are excoriated points scattered over the labia from 1 to 3 millimeters in diameter, evidently due to scratching. The inguinal glands on the right side are enlarged to the size of marbles and are quite tender. The glands on the left side are only slightly enlarged.

The patient was operated upon December 15, 1903. The inguinal glands on either side were first dissected out and the wounds closed with interrupted sutures of silkworm gut. The growth was then touched with the actual cautery, and the entire vulva, including the clitoris, was dissected away, elliptical incisions being made on either side from the pubes down to the fourchette. There was considerable bleeding, which was controlled by artery forceps and sponge pressure. The edges of the wound were brought together by continuous catgut sutures for the deeper tissue and interrupted silkworm-gut sutures uniting the skin to the cut edge of the mucous membrane of the vagina.

As the meatus was not involved, a small portion of mucous membrane surrounding it was left, which was stitched to the surrounding tissue by interrupted silkworm-gut sutures. A self-retaining catheter was then inserted. The patient made an uneventful recovery and left the hospital on January 11, 1904. She has been kept under observation since she returned home and there has been no sign of a recurrence of the disease.

Microscopic examination of the tissue removed shows the following: Serial sections of the glands removed failed to reveal any secondary involvement. Section through the border of the growth on the sound side shows the ordinary stratified squamous epithelium with its underlying areolar tissue. On the advancing border the papillary layer extends deeply into the subcutaneous tissue as long finger-like processes. About these extensions there is a small cell infiltration and increase of connective tissue with many new blood-vessels. Between the cords of epithelial cells and throughout the infiltrated area are numerous eosinophiles. In some places beneath the sound epithelium are areas with many nests of squamous cells which have advanced from other levels, some of these nests showing epithelial pearls. In the most active

part of the growth, the cells are very irregular. The nuclei show great variation in size, shape and chromatic content. For the most part they are large and hyperchromatic and show numerous division figures. The superficial cells in the older part have undergone simple necrosis and the surface is covered with leucocytes, fibrin and bacteria. Diagnosis: Squamous-celled carcinoma of vulva.

Epithelioma of the vulva occurs most commonly in women who



Fig. 1.—Epithelioma of vulva involving right labium minus and clitoris.

have passed the menopause, between the ages of forty-five and sixty, although it has been found between thirty and forty, and Peterson reports a case at the age of eighty-four. It is a rare condition as seen by the fact that during the past three years in the University of Michigan Hospital, of the 900 patients admitted to the gynecological service, and of whom accurate case records have been kept, there have been but three cases of primary carcinoma of the vulva. In this time there have been 39 cases of carcinoma

involving the female genital tract, 7.7 per cent. of which have been primary in the vulva.

The case reported above shows the typical course of the disease. The first symptom noticed by the patient in the majority of cases is an intense itching. Soon after a hard, nodular mass may be seen, infiltrating the skin. As the disease progresses, excoriations occur and there are areas of ulcerating, sloughing tissue scattered through the center of the growth, while the edge is beveled and not undermined. The parts involved are usually very painful and sensitive, and pain on micturition is often a prominent symptom. The inguinal glands on the same side as the growth



Fig. 2.—Showing cicatrices after removal of entire vulva and inguinal glands for epithelioma.

become involved and as the growth invades the opposite side of the vulva, the glands on that side become infected. There is usually very little difficulty in making the diagnosis, and where any doubt exists a portion of the growth should be removed and examined microscopically.

The only treatment for this class of cases is that which aims at radical removal of the entire diseased tissue, including the vulva and clitoris.

In no given case is it possible to say that the inguinal glands

are not involved and it is therefore absolutely necessary that they be removed also. In performing the operation, the glands should first be dissected out, care being used to avoid contamination from below. It is often best first to disinfect thoroughly the sloughing mass by the actual cautery or some caustic agent before beginning excision. The vulva and clitoris are removed by deep elliptical incisions starting well above the latter and meeting below the fourchette. The bleeding is usually free, but can be controlled by hemostats and sponge pressure. The parts are then brought together by sutures passing from the healthy skin on the outside to the mucous membrane of the vagina. In no case of carcinoma of the female genital tract does the radical operation show such good results as in primary epithelioma of the vulva. It is therefore the duty of every physician to see that the condition is recognized early and subjected to the appropriate treatment.

BATHING DURING THE MENSTRUAL PERIOD.¹

BY

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IN my practice for some years past I have found myself compelled to test the value of the traditional belief of both profession and laity, that it is advisable to omit bathing during the menstrual period.

The avoidance of bathing during this time has come down to us from biblical times, and in the Mosaic code of hygiene in the old Testament will be found very definite rules upon that practice, but it would appear from the inquiries that I have made as a basis from the present paper, that very hazy notions exist upon the subject not only among Christian physicians but also among those who consider themselves Orthodox Hebrews in belief and practice.

Customs among primitive people in regard to the bath during the menstrual period are much the same as those generally in vogue among the women of our civilization.

As a rule the full bath is customary and required by religious law *after* the period; among some people upon the cessation of the flow; among others not until the termination of

¹Read before the American Gynecological Society, May 26, 1904.

the period of menstrual uncleanness, which is usually about twice the number of days of the bloody flow.

All primitive people have in their religious teaching the belief of uncleanness during the flow and this to an extreme degree, necessitating isolation, and forbidding all contact with their fellows, thus causing an enforced rest. Somewhat less strictly is the isolation observed during the period of partial uncleanness for four or five days more and this last period is terminated by the bath.

Sometimes this bath is customary when the flow ceases at the end of the period proper.

The Talmud orders the Jews to wash when the flow ceases, and not until so thoroughly cleansed is the dip or full bath permitted.

Among some of the African tribes the bath is not taken until the tenth day, after five days of complete and five of partial uncleanness.

Special attention should be directed to the custom of the Hindus and Jews, who demand a cleansing by washing in warm water before the bath, thus securing a more thorough purification.

In the consideration of this subject several questions suggest themselves to us, namely:

1. The advisability of bathing of any description during the menstrual period; and if at all to what extent.
2. The use of the bath in dysmenorrhea.
3. The use of Nauheim or other chemical baths or hydropathic procedures.
4. The risk of infection of the endometrium in intra-menstrual tub bathing.
5. The influence of modern athletics on women lessening the risk, if any, of intra-menstrual bathing.

These questions in the form of a circular letter, I have submitted to the members of the American Gynecological Society, the New York Clinical Society, the New York Obstetrical Society and others, from whom one hundred and twenty-two acknowledgments have been received.

The superintendents of four of the largest training schools for nurses in New York City have also been questioned upon the subject, as well as the resident trained nurse or medical officer of several colleges for women.

It may be well, at this point, to state that my definition of a *cold bath* is one with a temperature of 75° F. or under; a *tem-*

perate bath of 75° to 85° F.; a *tepid bath* of 85° to 92° F.; and a *warm or hot bath* of 90° to 105° F.

I. THE ADVISABILITY OF BATHING OF ANY DESCRIPTION DURING THE MENSTRUAL PERIOD, AND IF AT ALL, TO WHAT EXTENT.

During the past ten years certain physicians, both in this country and abroad, but especially on the Continent of Europe, have come out in favor of bathing during menstruation, and the present study and inquiry has been undertaken in order, if possible, that we may formulate some safe conclusions, and to obtain the opinion prevalent among the physicians throughout this country upon the subject. That many contradictory statements exist, is clearly shown in the following half-dozen abstracts taken from foreign literature, and from answers to my circular.

Schauta, of Vienna (*Lehrbuch d. ges. Gynakol.*, 1896, p. 105), advises against both warm and cold baths, he claiming that the former promote while the latter suppress the hemorrhage.

Kisch (*Badecuren bei weiblichen sexualerki, Encyclopadie d. Geb. v. Gynak.*, p. 100) states that as a general rule bathing during menstruation should be forbidden. Exceptions are to be made, however, in special cases only in which scanty menstruation may be treated by carbonic acid baths, which bring about an increase of the physiological congestion of the ovaries.

Glax, J. (*Lehrbuch d. Balneotherapie*, 1900, II, p. 284), writing in 1900, states that bathing of any sort is never justifiable during menstruation; but admits that the simple warm bath *may* be harmless.

Fehling, in this work on Gynecology (*Lehrbuch d. Frauenkrankh.*, 1900, p. 142), states that cold baths during menstruation are dangerous, by causing suppression and unpleasant congestive disturbances. Warm baths may sometimes produce a similar result and when there is a tendency to menorrhagia they may increase the hemorrhage. Lukewarm baths need only be discontinued during the time of maximum hemorrhage. After the discharge has become a mere bloody mucus, bathing may be resumed.

Grenell (*Ueber die Wassercur wahrend der Menstruationsperiode, Uebersetzt von Spoerl-Gamma, Erlangen*, 1891), writing in 1891 stood for the permission of bathing throughout the entire course of menstruation provided it was applied according to correct hydiatic principles. He had never seen the slightest physiological disturbance resulting.

Winternitz (*Die Hydrotherapie auf physiol. v. klin. Grundlage*, 1890, I, p. 403), writing in 1890, permitted general bathing and hydriatic procedures up to the beginning of the menstrual period; but after the latter had begun, they could be continued only when the indication was urgent, as in typhoid fever. Winternitz had never seen any real disadvantage follow bathing during menstruation. Exceptionally cessation of bleeding, backache and uterine and ovarian colic were observed.

Honzell, G. (On the Influence of Sea Baths on Menstruation, *Ann. de Gynecol. et d'Obstét.*, 1894. No. 12), in 1895 published his investigations concerning 123 fisherwomen. He found that the wading in icy water often was accompanied by normal painless menstruation, provided that the women had become accustomed to it; and that sea baths among these people could be taken from puberty to the menopause without ill results.

An analysis of the 122 answers received to this question reveals the facts that no less than 113 correspondents either advise or sanction some form of bathing during the menstrual period.

In a few instances this is limited to the last day of the period, or is restricted to mere cleansing of the vulva when the napkins are changed, etc. In the vast majority of cases bathing means actual baths in some form during the menstrual period. A few who favored bathing *per se*, omit it on the first day or so of the period. But nine of the correspondents put themselves on record as opposed to bathing under any ordinary circumstances.

In regard to the character of the bathing, 63, or over one-half, permit only local baths, this term comprising ordinary sponging of the surface. Within these limits we find every shade of opinion. Some permit only such bathing as is concerned with cleanliness proper—as face, hands, feet, genitals, armpits, etc. The majority, however, seem to mean an ordinary sponge bath, as distinguished from a tub bath. This class of 63 cases may therefore be understood to mean anything short of a tub bath.

Thirty-three correspondents sanction, in addition to local sponging, the use of the tub.

In regard to the temperature of the water a large majority of reporters, 87, specify that only warm or lukewarm (a few speak of hot) water is to be used, whether the bath be local or full.

In 18 replies cool or cold water is sanctioned if the woman is accustomed thereto; and in twelve others the use of any form of bath to which the woman is addicted, or for which she had a natural preference, is sanctioned. This means that 30 correspondents

see no objection in a woman having a cool or cold bath, provided she was used to it and derived no ill consequences.

In regard to the time for bathing, it is natural that the great majority recommend the same course throughout the period (76 reports). A small number (25), while recommending bathing as a general proposition, seem to qualify this by the statement that the end, rather than the beginning is the preferred time. In other words, they appear to deem it wise to refrain from bathing during the first day or two of the flow. The very few (3) who recommend bathing at the beginning, rather than the end of the period, were probably thinking of therapeutic baths for dysmenorrhea.

2. THE USE OF BATHS IN DYSMENORRHEA.

In regard to special *hydriatic procedures*, or therapeutic baths for *dysmenorrhea*, we find that 76 correspondents recommend them. In the great majority the hot sitz or foot bath is recommended. A few mention hot, full baths, and in a particular class of cases these baths are advised just before and during the onset of the flow. Some would use the hot bath until a free flow is established and pain ceases. The remainder (about one-third) of the correspondents apparently see no efficacy in baths for dysmenorrhea.

3. THE USE OF NAUHEIM OR OTHER CHEMICAL BATHS, OR HYDRIATIC PROCEDURES DURING MENSTRUATION.

Makaweir, J. (*Mineralbader zur Zeiten normalen und pathologischen Menstruation, Zeitschr. f. Gebarts. v. Gynakol.*, XXV, p. 77) reported that twenty-six women with normal genitals and normal menstruation suffered no ill results from the mineral baths of Staraza Ruska (85.4° F.; 28° R.), the menstruation being unaffected; while in thirty-one women with normal menstruation not dependent apparently upon structural disease, the action of bathing upon the menstrual function was distinctly favorable.

Keller, H. (1897), (*Die Menstruation und Bedeutung für Curproceduren, 18 Versamml. d. balneol. Gesell.*, 1897) has frequently noticed in the course of simple warm brine baths that menstruation went on as usual. Nevertheless he advised that treatment should be omitted for from three to five days corresponding to the period in order that the mental and bodily exhaustion or irritability be not augmented, and no opportunity be furnished for catching cold.

Loebel (1896), (*Die Menstruation in der Balneotherapie*, 19 *Versamml. d. balneo. Gesell.*, 1896), states that moor baths (mud baths) may be continued during menstruation when strictly indicated, and that they may even then exert a favorable influence upon gynecological affections.

Dr. Richard Fischel, 1903 (The Thermically Indifferent Bath during Menstruation, with Special Reference to the Iodine-salt Baths of Bad Haller, *Prague Med. Wochensch.*, May 7, 1903), in a review of these citations and the literature of the subject claims that the problem has never been submitted to a special and exact clinical investigation. He therefore determined to test in this respect thermically indifferent fresh water baths, and brine baths with addition of iodides, upon the prostitute material of his clinic. All servant girls and prostitutes with venereal diseases, who were found to be free from gynecological affections, and at most had only a history of slight dysmenorrhea, were submitted to the test. Although the material was very large, a relatively small number were suitable for the experiment. Other women patients could not be controlled for these tests.

In a first series of twelve cases the patients took general baths of aqueduct water at 64°-88° F. (21°-29° R.).

In the second, of twelve cases, the iodide baths were used, from 100 to 125 grains of salt being added to each bath. The baths were given at 7 A.M. and 11 A.M. respectively, and the girls were then put to bed to prevent catching cold. The management also differed from that used in ordinary routine in other respects. Thus these patients were not permitted to leave their rooms during the hospital sojourn treatment.

Of the first series but two of the twelve cases showed any influence upon menstruation. These two appeared to show a shortening of the period as compared with previous menstruation. The differences, however, were slight, and may have been due to errors of computation.

In a few cases slight bearing-down pains in the abdomen were mentioned. Actual suffering, however, was absent. In three cases the period seemed to come on ahead of time, and in one case it was retarded. Tampons were used and were weighed in all cases, and in but one was evidence thus obtained that an increase of hemorrhage had occurred.

In the second series of cases (iodized brine baths) one woman had her menses cease during the first day of the period. The baths were continued, however, and menstruation ceased on the

third day. If the girl's word could be taken, she always menstruated five days. In both these cases baths were begun during menstruation. But in two other cases in which the first bath was taken in the midst of menstruation, no such result was obtained.

In one case of the second series the menses were retarded. In another, after apparent normal cessation of menses, a slight secondary hemorrhage supervened two days later, the baths having been continued.

In two cases the dysmenorrhea was entirely relieved, once by sitz, and once by full baths. Generally speaking, no bad results were noticed in either series.

In one case in Series I. the patient was tested again two years after her first baths, without any bad results. During the interval she had been quite free from menstrual disturbances.

Fischel's conclusion from these experiments, is that scruples against bathing during menstruation are not borne out by facts.

The answers received to this question in my circular seem to show that the query in regard to *Nauheim* or mineral baths was evidently not fully comprehended by many reporters; and but fifty-five definite answers were received.

Of this number, thirty thought that the baths were contraindicated during the menses; while the other twenty-five gave chiefly a qualified assent, *i.e.*, if the conditions of temperature, duration, habits, etc., were favorable, the baths might be permitted.

Several state that in typhoid fever no account is taken of menstruation when hydiatic measures are considered necessary.

A physician in active practice at the Hot Springs of Arkansas writes me "that baths during the *entire* menstrual period are not contraindicated in certain well chosen cases, but on the contrary are beneficial."

A physician at the Mount Clemens Hot Sulphur Baths of Michigan, states in answer to my question that "he allows an rheumatic patient with normal menstruation to take the sulphur baths regardless of menstruation."

For several years past I have permitted patients to continue through the menstrual period the carbonate iron baths of St. Moritz, with the clear understanding that there shall be no chilling of the surface after the baths.

4. THE RISK OF INFECTION OF THE ENDOMETRIUM IN INTRA-MENSTRUAL BATHING.

The experiments of Winternitz appear to prove that the

water in an ordinary tub bath does not enter the normal vagina. His experiments consisted in the use of color reagents, such as iodine and starch. A tampon soaked with a starch solution was packed into the upper part of the vagina, and the bath water was impregnated with iodine. In none of his experiments could a positive reaction be obtained.

On the other hand, the experiments of Sticker (*Centralbl. für Gynäkologie*, Mar. 2, 1901), and Strogan (*Centralbl. für Gynäkologie*, Feb. 9, 1901) prove beyond question that in the latter part of pregnancy of both primigravidæ and multigravidæ, water from an ordinary tub bath readily penetrates as far as the cervical canal.

But one can readily understand how this could happen when the shortening of the vagina and gaping of the vulva in the last days of pregnancy are taken into account.

At present we have no experimental proof that water penetrates the cervical canal in intra-menstrual tub bathing.

In regard to the risk of infection from tub bathing, seventy-five reporters to my circular could see no danger save under some unusual conditions; as when polluted water was used. There were thirty-three reports which admitted the presence of a certain risk. No one seemed to know of any special cases.

In other words about three-fifths feel safe to state off-hand that there is no danger, or at most only a nominal one. The other two-fifths do not recognize any great danger, but are not quite satisfied to say so without some qualification, as for example that there is some possibility of a congestion of the pelvic viscera starting up a latent infection and that there is also some risk from dirty water, sponges, wash-cloths, etc.

I firmly believe that there is a distinct risk of infection of the uterus in both intrapartum and intramenstrual tub bathing. Some cases of early puerperal infection in primiparæ who have not even been digitally examined, can be explained on no other grounds, and many cases of pelvic inflammation, of salpingitis and pelvic adhesions in young girls would seem to depend upon no other source of infection.

The risk, if any, of uterine infection during intramenstrual tub bathing can be avoided by the substitution of the shower for the tub until after the active hemorrhage has ceased, indicating the regeneration of the menstrual decidua.

5. THE INFLUENCE OF MODERN ATHLETICS ON WOMEN, LESSENING THE RISK, IF ANY, OF INTRAMENSTRUAL BATHING.

As far as my study and inquiries have gone, I can find no evidence to show that the influence of modern athletics on women lessens the danger of intra-menstrual bathing directly, although there seems no doubt but that it does indirectly by strengthening the system and making the individual more robust and less easily affected by conditions which would certainly prove injurious to the more sensitive and feeble.

In regard to athletics, sixty-five reporters to my circular thought they enabled a woman to bathe during the menses with more impunity; in nearly every case the benefit conferred was indirect. Twenty-three other reporters saw no connection whatever between athletics and immunity to bad effects of bathing.

The advisability of at least the same frequency, if not the same character of bathing during the menstrual period as at other times, on both hygienic and esthetic grounds, goes without the saying, and women who have accustomed themselves to routine daily bathing at this time suffer actual physical discomfort when for any reason the bathing is interdicted.

The excretory functions of the cutaneous glands, but especially of the axillae and vulva, are exaggerated during menstruation, giving out in not a few women offensive odors, which common decency, if not hygiene, demands shall be corrected by frequent bathing and not by perfumes and deodorizing powders.

Can we say to the patient who appeals to her physician for some rescue from the prejudices and traditions of her mother and grandmother, that she can safely continue through her menstrual period her custom of bathing and personal cleanliness that has been her habit during the intermenstrual month? With certain limitations, yes. My belief is that with certain distinct exceptions, all objections against bathing during menstruation emanate from tradition and popular fallacy, and can be answered along these grounds alone.

Further, the statement that the use of the bath at this time is all a matter of habit and can be acquired by gentle progressing, by gradual acquirement, is true in the majority of cases of healthy women, although it does not, of course, hold good for every woman. Menstruation promptly ceases in some individuals if only cool water is applied to the external genitals, with others even if cold water is applied to the body or face.

My inquiries show that nurses not infrequently suffer from not only dysmenorrhea, but acute suppression and pelvic colic, while immersing their arms in cold water in the administering of cold (75° F. and under) baths and packs.

In my practice are two sisters, both married, both the mothers of several children, both apparently equally strong and healthy, and both with normal menstrual functions. The elder of the two has used tub baths (tepid) and salt water bathing regularly in Long Island Sound without any regard to her menstrual periods. The younger of the two has repeatedly attempted to do the same, on the advice of the elder, and each attempt has been followed by acute suppression, pelvic congestion and ovarian colic.

In the past five years several cases of obstinate amenorrhea have come under my observation, caused by the attempt on the part of the patient to disprove the popular belief that surf-bathing cannot be enjoyed with immunity during the menstrual period.

Again, the teaching that whatever the habit or custom of the woman in bathing during the intermenstrual month can be safely continued during menstruation, is not to be blindly followed. My observation and inquiries would indicate that only a few who are accustomed to a daily morning "cold tub" can without inconvenience continue this during menstruation. But, on the other hand, I find that the daily routine as regards the "cold tub" can be returned to much earlier during the flow than is generally the custom, say on the second or third day. I find that many follow this custom, and only substitute the tepid sponge for the "cold tub" on the first and second day, and find no reason to regret it.

"Cold tubbing" throughout menstruation is the exception among American women. This I gather from my circular, and from the statements of superintendents of training schools for nurses, and health officers of colleges for women.

The resident trained nurse for five years of one of the largest colleges for women, with seven or eight hundred students between the ages of seventeen and twenty, informs me that only a few of this number are accustomed to take the "cold tub" during menstruation, and these were accustomed to do so from puberty. It was the custom of these girls to fill the tub with water as it ran from the cold water faucet, and, jumping into the water, to remain there one or two minutes. In these exceptional cases there was no disturbance of menstruation brought to the attention of the Health Officer or Resident Trained Nurse of the College.

The superintendent of one training school for nurses informs me that many nurses on entering the school were not accustomed to use even a daily "tepid sponge" during menstruation, but that all were advised to do so, and soon acquired this habit, in response to the demands of a more thorough personal cleanliness, and that a few omitted their customary "tub bath" only for the first or second day of the flow. Practically the same statement was made by the superintendent of two other training schools.

Another superintendent submitted the questions of the circular to twenty of the nurses in the school. All the twenty were in the habit of taking once or twice a day a full sponge bath: several took sitz baths in addition, and two had indulged in surf bathing during menstruation without attending discomfort.

The superintendent of one training school writes me that she advises the pupil nurses to take a full sponge bath of fresh tepid water every morning of the menstrual flow, and considers that by so doing no risks are run. At the same time, she states, she does not consider this method of bathing sufficient in all cases for personal cleanliness, but still she does not dare advise the tub or shower.

My belief is that the woman of ordinary strength and health is able to bathe during menstruation, following certain simple precautions, not only without any injury but with marked addition to her personal comfort and benefit to her general health.

I have never known any one injured by the practice as advised, and I feel sure it can be followed with safety.

Although I believe in the risk of infection of the uterus in tub bathing, still the great harm obtained is by chilling of the surface in improperly applied baths.

For some years past I have been advising bathing at this time under certain limitations, and although I have experienced some very unpleasant quarters of an hour with the mothers and even grandmothers of some of the patients, still I have had no reason to regret the practice.

My plan has been in cases in which no bathing has been the custom, and where prejudice was strong, to advise the "tepid sponge bath" once or twice daily during every day of the flow for one or two menstrual periods, at the same time insisting that the temperature of the bath-room shall be such as to avoid the possibility of an after-chilling of the surface, also that the sponging shall be rapid, a small portion of the body at a time, followed by rapid drying, and the whole procedure carried only to the

extent necessary for cleanliness. At the next or second succeeding period, a tepid shower or tepid bath is allowed after the flow is well established, say on the second or third day, always with the same precautions against chilling of the surface and only to the extent necessary for cleanliness. This plan is then thereafter adhered to.

Women accustomed to a daily morning cold tub or shower during the intermenstrual period, are permitted to gradually and cautiously continue the practice during menstruation, beginning its use on the last day of one menstrual period, and using it one day earlier each successive flow until the third or second day is reached.

The cold shower or tub on the first and second days I am accustomed to forbid, substituting the tepid sponge, although I know of instances of the first plan where apparently no harm results. Thus by a gradual progression, by gentle changes, avoiding any *sudden* change in the custom of the individual, the habit of bathing during menstruation can be acquired with safety.

Surf bathing I would make an exception in all cases, and prohibit it on account of the exposure with its attendant dangers of surface chilling.

Conclusions.

1. All forms of bathing during the menstrual period are largely a matter of habit, and usually can be acquired by cautious and gentle progression, but not for every woman does this hold good, and surf bathing, where the body surface remains chilled for some time, should always be excepted.

2. A daily tepid sponge bath (85° to 92° F.) during the menstrual period, is not only a harmless proceeding, but is demanded by the rules of hygiene.

3. In the majority, if not all women, tepid (85° to 92° F.) sponge bathing after the establishment of the menstrual flow, namely second or third day, is a perfectly safe practice.

4. Further, in most women, the habit of using the tepid shower or tub bath after the first day or two of the flow, can with safety be acquired.

50 E. 34TH STREET.

A STUDY OF INTESTINAL PERFORATION AND PERITONITIS
IN TYPHOID FEVER, WITH A REPORT OF 3 SUCCESS-
FUL OPERATIONS, AND A STATISTICAL INVE-
STIGATION OF 295 OPERATIVE CASES.

BY

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THAT immortal phrase, "The resources of surgery are rarely successful when practised on the dying," has been most wonderfully negated in the operative treatment of perforative peritonitis in typhoid fever. Surgery has reclaimed many otherwise irremediable conditions. It was a great step when Sims suggested abdominal section for intestinal perforation for gunshot wounds, which daily rescues many victims. It was a great step when Fitz and McBurney taught us the frequency and means of relief of perforation of the appendix, which has saved so many valuable lives. But it is a still greater achievement to be able to succor the hopeless sufferer from the onslaught of a fatal peritonitis from perforation in typhoid fever.

The possibilities of this latter achievement, however, have not yet been appreciated keenly enough by the profession. It is almost a score of years since Mikulicz did his first operation in 1884. Since that time, I am only able to collect, from all sources, by the most diligent search through the literature, together with cases personally communicated, 295 cases that have been subjected to operation up to May 1, 1903. Granting that there have been as many, or twice as many, more cases that have not been reported or found, I still claim that the total sum is pitifully meager.

When we reflect that an estimate of 500,000 cases a year occur in this country alone, and with a general death rate of 10 per cent. to 15 per cent., 50,000 or 75,000 souls perish annually from this terrible scourge which we daily implore families and municipalities to prevent, it becomes necessary for the profession to bestir itself to reduce the mortality statistics of this disease.

Osler says that one-third of the deaths from typhoid fever are due to intestinal perforation. Taylor thus estimates that 25,000 deaths occur yearly from this accident. On the basis of a possible 30 per cent. recovery by operative interference, he further con-

cludes that 7,500 persons perish in the United States each year who might be saved.

The reasons for this are complex. They are partly preventable and partly irremediable at this time. One explanation is the reluctance with which the practitioner invokes the aid of surgery in the presence of such forbidding general symptoms. Another is the likelihood of death even with operation; but greatest of all is the great difficulty of making a positive diagnosis in the early stages. This difficulty will always exist, with our present methods of diagnosis. It may be considerably lessened by possessing a proper appreciation of even the suspicious abdominal symptoms,—intelligent alertness, and frequent examination.

Perhaps the greatest stumbling block is the classical picture of perforation which needs erasing; the drawn, pinched features, pointed nose, profuse sweat, cold extremities, rapid, feeble pulse, short, sighing respiration, distended and motionless abdomen, restlessness and delirium,—these are the late and lethal manifestations of peritonitis and not of perforation.

I regret that the other side of the shield does not bear as characteristic a picture of the early symptoms of perforation. Some cases are fairly typical, but others presenting such presumably typical symptoms are found not to have perforation. Again, peritonitis may be the first symptom. Given, a man in the third week of a mild attack, without abdominal symptoms and pursuing a regular course, who is suddenly seized with an acute, paroxysmal pain in the right lower quadrant of the abdomen that causes him to cry out, that is unrelieved by ordinary measures, followed by collapse, sub-normal temperature and rapid pulse, which are succeeded by a rise in temperature in a few hours, associated with continued pain, considerable tenderness and right-sided rigidity together with a rapidly increasing leucocytosis, the diagnosis of intestinal perforation is reasonably certain,—not absolutely,—but surgically. All such cases should be operated on as quickly as possible. The difficulty is that all cases do not present this typical grouping.

No abdominal symptom objective or subjective occurring in typhoid should be considered trivial. Pain is usually the first note of alarm. My study of the reported cases develops that a sudden severe, colicky pain is present in a large majority of cases. Collapse is an infrequent attendant of perforation and was present in only about 6 or 7 per cent. Fall in temperature was not constant but rise in pulse was rather uniform.

Of the physical signs tenderness (sensitiveness) was found to be the most constant. And studied in the order of their development and more especially their significance, it was found that pain, then tenderness, then rigidity and then localization in one spot occurred. Persistence of symptoms serves to distinguish them from colic, which should disappear in a few hours or change its location.

Recognizing the difficulties and limitations in diagnosis, exploratory incision should be regarded as a necessary and final aid in diagnosis. The facts about intestinal perforation which I have deduced from a statistical study of the cases may be summarized as follows:

I. It occurs more often in men than women,—80.9 per cent. vs. 19.1 per cent. It is, like hemorrhage, rare in children.

II. It occurs in about 2.5 per cent. of all cases of typhoid fever.

III. 3.31 per cent. occur in the 1st week; 20.19 per cent. in 2d week; 38.94 per cent. in 3d week; 14.40 per cent. in 4th week; 9.13 per cent. in 5th week; 5.75 per cent. in 6th week; 7.21 per cent. from 7th to 11th week, and it has been observed as late as 100th day (Curschmann). Holmes operated on 1 case after 4 months.

IV. It naturally occurs more frequently in severe attacks, but may occur in mild attacks, and it may be the first real symptom of so-called walking typhoid.

V. It occurs in the ileum in 95.5 per cent., usually within 18 in. of cecum (Osler), always within 3 ft. (Loison); in the large intestine in 12.9 per cent., and is most often situated in the ascending, transverse and descending colon, sigmoid and rectum, in the order named. It may occur, also, in the appendix, Meckel's diverticulum and the jejunum.

VI. The perforation is single in 84 per cent. There may be 2 or more, and in one case there were 25 (post-mortem). Cases with diarrhea and tympany are more likely to have perforation. Six out of 30 cases occurred with hemorrhage (Osler).

VII. The death rate given by Murchison is 90 per cent. to 95 per cent. Osler says he could not recall a single case in his experience that had recovered after perforation had occurred.

Occasionally the careful observer and conscientious surgeon, in his earnest effort to interpret signs aright, and to operate before general peritonitis has rendered the patient hopeless, may open the abdomen to find no lesion whatever. This has been done by the most expert, and will sometimes happen until we devise

some absolute early sign. Commonly the patients progress and get well, as though nothing had been done to them. It has demonstrated the fact that these patients will bear the surgery necessary to make a positive diagnosis in suspected, but doubtful cases. Indeed, Finney advises exploratory laparotomy under cocaine anesthesia in suspected cases. To be sure, there is some chagrin attaching to a seemingly unnecessary operation, but it is much better to do such an operation upon a mistaken diagnosis, than to neglect to do it upon a case that demands it.

To avoid this embarrassment Connell has ingeniously devised recently a procedure based upon the fact that sulphuretted hydrogen will, when passed through a solution of acetate of lead, turn it black by the formation of sulphide of lead. He proposes, as the result of animal experimentation, to introduce an ordinary trocar and canula into the lower part of the abdomen in suspected cases of intestinal perforation, to insufflate filtered air, which, mixing with the intestinal gas in the peritoneal cavity, is allowed to escape through another canula at the upper part of the abdomen, into a solution of acetate of lead. If sulphuretted hydrogen be present as a result of a perforation, the reaction will take place.

Other experiments were made by injecting sterile salt solution, and withdrawing it in from 3 to 12 hours. Where the intestine had been intentionally punctured or opened, and the salt solution allowed to mix with the fecal extravasation, when it was withdrawn, ammonia could be detected by Nessler's reagent, indol by sodium nitrate and sulphuric acid, and proteoses by the biuret test.

None of these tests were positive in air or fluid injected and recovered from the normal peritoneal cavity. The method appears to be harmless, but lacks additional confirmation as to its uniformity and reliability. Meanwhile, the diagnosis of perforation must rest upon the minutest scrutiny of suspicious signs, which, if deemed reasonably certain, should demand an exploration; or, upon the advent of peritonitis, it should be imperative. The mild and early symptoms are the important ones. The severe symptoms usually mean peritonitis.

It is surgically immaterial whether a perforation exists or not if there is peritonitis. It is more apt to be localized if there is no great extravasation. Peritonitis in typhoid fever may be due to migration of bacteria through the intestinal walls without actual perforation, as evidenced by the number of cases of peritonitis

without perforation. It may result from ruptured abscess of the liver, rupture of the spleen, of the gall-bladder or ducts, of the mesenteric glands or the appendix, and from gangrene of the intestine caused by thrombosis.

The surgeon should stand in close relationship with the physician in typhoid fever, as is now the quite general custom in appendicitis. Cushing advises that he should be consulted at the first indication of a localized peritonitis; should perforation and extravasation occur operation may then be undertaken without delay. Osler advises, "In doubtful cases patients should be given the benefit of the doubt and operation urged" (*London Lancet*, February 9, 1901). Keen says, "We should operate in practically every case of perforation, unless the condition is such that recovery is evidently hopeless" (*Jour. A. M. A.*, June 20, 1900, p. 131). Further "after perforation has occurred operation should be done at the earliest possible moment, provided that we wait till the primary shock, if any be present, has subsided."

CASE I.—My first case was in 1898, and reported in the *Trans. of the Southern Surg. and Gynecol. Assn.*, 1899. Woman, 19 years of age, married 8 months. In the 3d week of severe typhoid fever with delirium, a tender swelling developed in right iliac region, that was quite frank and prominent. When I incised it the gas and pus were forcibly ejected from the tension in the sac. It was larger than a cocoanut, and well walled off.

The cavity healed in about 3 weeks. The fever progressed with increasing severity and she died from toxemia, $3\frac{1}{2}$ weeks after operation in the 7th week of the disease. Widal's test positive. No autopsy. This case is very similar to case No. 122, in Keen's list, reported by Munro, which is recorded as a surgical recovery.

CASE II.—July, 1901. Boy, 9 years of age with mild typhoid, with some tenderness and slight rigidity in the right iliac region that inclined us to the diagnosis of appendicitis. On the 19th day he developed symptoms of localized peritonitis in right iliac region. Incision over the slightly dull tumor, at my clinic at the University of the South, revealed a fairly well walled-off area, the walls of which were almost in apposition, the sides and bottom of which presented 3 perforations; 2 appeared to be in the inner wall, composed of small bowel, and 1 in the outer wall or colon; no pus but a slight amount of fecal fluid. All of these openings were sutured and drainage established. A fecal fistula appeared on the 3d day and has persisted since. He remained

in bed with typhoid symptoms and temperature for 10 weeks, and developed a suppurating left parotid. I closed the fistula 18 months afterward with success.

These cases were examples of the two types of local peritonitis, —perforation with abscess formation, and perforation with walling-off by adhesive peritonitis, the perforation still patent.

CASE III. *Example of Free Perforation.*—Male, æt. 34; in previous good health. He was under the care of Dr. Sugg, of Beachville, Tenn. On October 8th, 1903 (the 12th day of the disease), the temp. was 101, instead of 100 as usual; the pulse 92 instead of 72 or 80. An enema was given, which acted well. At 11 o'clock the patient was seized with sudden, severe, colicky, abdominal pain. The pain abated somewhat, and when the doctor reached him the temperature was normal and pulse 72. An enema was ordered and a turpentine stupe applied. At this time there was little or no tympanites, nor had there been in the entire progress of the case.

At 2 p.m.—3 hours after the onset of pain, the patient was still suffering with considerable abdominal pain. There was slight tenderness on pressure over the abdomen, which was most pronounced in the right lower quadrant, extending a trifle to the left of the median line. There was slight abdominal distention. The temperature had risen to 104 and pulse was 120. The face was anxious and apprehensive.

Dr. Sugg made the diagnosis of perforation. The patient was 10 miles in the country, and I reached him 7½ hours after the onset of pain. The conditions were unchanged, except the temperature had receded to 102.6 and the pulse was 116. The sudden onset of acute abdominal pain in the second week of a mild case of typhoid, followed by rapid rise in temperature and pulse-rate, the anxious facies, the undiminished pain, the distention, tenderness and rigidity indicative of beginning peritonitis, pointed quite strongly to perforation.

Although it was after nightfall, in a 3-room farm house, with no facilities for operating, yet in the face of an otherwise fatal issue, and with the patient's consent, preparations were made as rapidly and completely as possible, and abdominal section was made 8½ hours after the onset of pain. When the peritoneum was opened in the right semilunar line, a quantity of free, odorless, chyme-like, yellow fluid made its escape. The cecum was at once located and pulled up with the appendix for inspection. The latter was found to be normal. The adjacent ileum was deeply

injected and presented a modena-color, and was slimy from being bathed in the pea-soup effusion. It was passed between the fingers for a few inches and at about 12 inches from the cecal extremity the perforation was found. The actual opening was small and situated in the center of an indurated area about as large as a 5-cent piece. Upon manipulation there exuded from the perforation yellowish intestinal contents corresponding in color and odorlessness to the free fluid found in the cavity. The knuckle of gut containing the perforation was surrounded by gauze pads and the indurated area containing it was inverted by 5 Lembert sutures of small silk. A second layer was placed above and between the first row and at the angles.

The sutured area was temporarily surrounded with gauze and replaced in the cavity pending the peritoneal toilet. As much of the pea-soup material as possible was sponged out of the right iliac fossa and the pelvis, and then the cavity was filled with salt solution poured from a pitcher. The small quantity that was prepared in the limited time was exhausted before the cavity was at all clean, and here came the greatest technical difficulty of the operation. There was an abundance of boiling water, but no cool boiled water. A by-stander was sent to the spring with a clean pitcher for water which had to be dipped up. This delayed us some minutes. I thought the unsterilized water was less harmful than the known septic fluid.

The irrigation was satisfactorily completed and the patient turned on his side and all fluid allowed to run out. The gauze around the injured intestine was replaced by two clean gauze strips which met under the perforation which was so disposed as to bring that portion just under the incision. A gauze strip was introduced into the bottom of the pelvis, and another in the right flank and the wound closed by interrupted silkworm gut sutures. The entire operation comprised 38 minutes, including the delay.

The pulse at completion was 96, and not above 84 on the following day. The temperature did not exceed 100.8. On the second night the temperature reached 102 and the pulse, after the excitement of being told of his serious condition by his wife, went to 120. With that exception the pulse did not go above 108. The facies during the second night was anxious, the legs flexed, the respiration difficult, nausea was persistent and vomiting frequent and offensive. There was considerable distention and severe pain, requiring $\frac{1}{8}$ gr. morphia, with marked subsidence of the symptoms. Flatus was passed in considerable quan-

tity toward morning and the patient was more comfortable, but the mind was not clear.

The gauze was removed in 40 hours, being loosened by hot salt solution introduced by a glass catheter, which was allowed to run into the abdomen until it came back clear. The bowels moved well after this, and the case progressed satisfactorily with a morning remission to 100 and an evening exacerbation to 101, pulse varying from 84 to 96.

On the 22d day of the fever and the 10th day after operation the temperature remained normal for two days and the stools appeared normal. On the 24th day he had a relapse, the temperature reaching 102.6 and the pulse 108. The tympany returned, rose-spots again appeared on the chest and abdomen, and the stools became loose and offensive. Defervescence occurred in the 5th week, the temperature returning to normal and the belly became scaphoid. The patient became brighter and hungry. He was again considered convalescent, but after 3 days of convalescence he became somnolent and listless; the urine diminished in quantity and was found to contain albumin in considerable quantity. He was greatly weakened, but was able to leave his bed in the 8th week and has remained well since.

Technique.—Inasmuch as the usual site is near the ileo-cecal valve the right iliac incision should be chosen. In cases of general peritonitis a central incision is better.

The ulcer, when found, may be trimmed or excised, or simple inversion by suture seems to be competent. The mattress suture has the advantage of only 1 knot for 2 threads. The second row may be continuous to save time and a third may be added if it does not constrict the lumen too much. Sutures may be transverse or longitudinal. Care should be taken not to cut off too much of the circulation when situated near the mesentery.

The Cargile membrane is recommended for additional protection. Search should be made for other perforations and any thinned areas inverted by suture. Resection may be practised if there is much destruction, but the formation of an artificial anus is best in the majority of cases in greatly debilitated subjects. Escher saved 3 out of 4 cases by ileostomy. Copious irrigation is essential in extravasation or general peritonitis. Sponging out is better in localized and walled-off areas.

Drainage by the vagina is preferable in women. Lumbar puncture and drainage by tube and gauze are expedient in men. Most

of the wound may be left open with advantage and the damaged area coffer-dammed with gauze and located very near the incision.

To facilitate drainage and localize infection in the less vulnerable pelvic peritoneum, instead of the fatally absorptive diaphragmatic area, Fowler advocates sitting the patient up at an angle of 40 degrees. Murphy reported 6 cases—consecutive—of general peritonitis (1 typhoid) which recovered where this was done. I have for some years been turning the drained cases of appendicitis on the right side from the start with this idea in view.

Statistics.—Westcott collected 83 cases in 1897 (pub. by Keen), 16 recoveries, 19.36 per cent.; Tinker collected 75 cases in 1898 (pub. by Keen), 21 recoveries, 26.66 per cent. I have collected 137 cases (published and unpublished), 43 recoveries, 31.31 per cent. This makes a total of 295 cases, of which 80 recovered, 27.11 per cent. Of this grand total only 246 were sufficiently complete for purposes of study. Of this number there were: 89 cases of free perforation, 29 recoveries, 36 per cent.; 19 cases of localized peritonitis, 9 recoveries, 47.3 per cent.; 138 cases of general peritonitis, 29 recoveries, 21 per cent. There were 16 cases done at Johns Hopkins up to 1901 with 6 deaths, 37.5 per cent. Cushing did 11 cases with 5 recoveries, or 45.5 per cent. He predicts that the percentage of recovery will soon be from 50 to 60.

I feel that a saving of over 27 per cent. in all cases, good and bad, extending over a period of 20 years is a most encouraging showing and that 36 per cent. in cases of free perforation should encourage us to a more prompt diagnosis and the invocation of surgical relief to these otherwise hopeless subjects. A more general appreciation and application of the possibilities of operation for typhoid perforation will not only be a great surgical triumph, but will add many precious years to the span of human life.

PRIMARY REPAIR OF LACERATIONS OF THE CERVIX UTERI.¹

BY

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THE necessity for immediately closing extensive lacerations of the cervix accompanied by hemorrhage and the fact that good union followed in many of these cases led me to investigate the immediate closure of the cervix in cases of considerable laceration without hemorrhage.

Experience in 53 cases has led to the following conclusions: When the patient is not infected and when the tissues have not been subjected to sufficient violence to threaten necrosis, and laceration of the cervix one-half inch in extent is present, primary closure has been followed in our experience with good results. These cases usually occur in primiparæ where resistance in the soft parts occasions sufficient delay and fatigue to require delivery by forceps. They are also seen in cases of premature labor whether spontaneous or induced, where the cervix is not physiologically softened for perfect dilatation. They are also found in patients having spontaneous labor with very strong expulsive efforts and with large children. Naturally these cases in which the mechanism of labor is abnormal through posterior rotation of the occiput, face presentation or breech presentation, predispose to laceration of the cervix.

While primary closure of laceration of the cervix is indicated in the conditions just described, certain conditions are necessary for its successful performance. The operator must be accustomed to operating upon the cervix. He must place his patient at the moment of delivery or afterward in a suitable position for operation, where a good light is obtained and where aseptic conditions can be maintained. He must have at his disposal the necessary facilities for asepsis, anesthesia and the necessary assistants. Practitioners who are accustomed to deliver patients upon a low and inconvenient bed without suitable appliances for aseptic operations and without necessary assistants, should not undertake the primary closure of the lacerated cervix.

The technique of the operation consists in thoroughly cleansing

¹Read before the American Gynecological Society, May, 1904.

the cervix and vagina with an antiseptic solution, and should hemorrhage from the body of the uterus be pronounced, the operator must delay until the womb contracts or must tampon the cavity of the uterus with sterile or antiseptic gauze. The lips of the cervix may be grasped at the central point by tenacula, or one strong tenaculum may grasp both lips together in the center. Loose ends of tissue should be removed by scissors, the cervix should be drawn strongly to one side by the tenacula and held by an assistant. The vaginal walls are retracted by the fingers of an assistant or by a retractor, and, beginning at the upper extremity of the laceration, stitches of chromicized catgut, No. 2, are inserted, passing to the mucous membrane of the cervix, but if possible, avoiding it. These stitches are inserted one-eighth of an inch apart and are firmly tied. They should extend to within one-eighth of an inch of the termination of the tear. The mistake should not be made of attempting to close completely the external portion of the laceration; this will heal spontaneously. The remaining laceration is closed in the same manner, and the operator may then proceed to close the anterior and posterior segments of the pelvic floor if lacerated. He may leave the uterine tampon if the condition of the uterus demands it, or it may be removed; its presence will not interfere with the healing of the laceration. After all lacerations are closed, the vagina is thoroughly cleansed with an antiseptic solution, the external parts are made aseptic and external dressings are applied.

The after-treatment of these cases consists in careful external antiseptics. Antiseptic dressings should be constantly worn, the external parts thoroughly cleansed after the bladder and bowel are emptied. The sutures do not require removal if catgut is used, and we have seen no annoyance to the patient follow the retention of catgut for several weeks.

The number of cases under observation was 53. In these good union occurred in 45; fair union in 6; no union in 2, while infection developed in none. In 84.9 per cent. the operation was successful; in 11.3 per cent. it was moderately successful, and in 3.8 per cent. the operation failed. The percentage of infection was nil.

The following cases from private records may be taken as typical of those patients in whom the operation is most likely to do good.

Primipara, above average age, had abdominal section for infected ovarian cyst following typhoid. During the latter weeks

of pregnancy developed acute polyhydramnios, premature rupture of the membranes with premature labor. Child small, cervix dilated slowly, exhaustion threatened while head was in the cervix. Delivered by forceps; laceration of cervix, immediate repair; complete union.

Primipara, muscular, strong, highly nervous; pains lessened before rotation was complete. Patient very sensitive to pain, tissues resisting. Delivered by forceps under ether. Unilateral laceration of cervix, central laceration of perineum extending to the bowel. Immediate closure of both, complete union.

One of the two cases in which failure of union occurred was closure of the cervix following embryotomy in a patient who had remained neglected in labor for a long time.

Three objections are commonly urged against this operation: First, that in cases demanding it the tissues of the cervix are so bruised and swollen that accurate approximation is impossible and that union does not occur. To this, a reply, that in cases where labor has been neglected so long that the tissues of the birth canal are greatly swollen and infiltrated, immediate closure of the cervix or pelvic floor is contraindicated. In the hands of those competent to practice obstetrics, cases of labor are not allowed to reach this condition, but are terminated by timely delivery.

A second objection is found in the statement that lacerations of the cervix heal spontaneously and hence that immediate repair is unnecessary and meddlesome. In our experience, small lacerations in uninfected tissue heal spontaneously. A laceration of more than one-half inch and especially lacerations reaching nearly to the attachment of the vagina do not do so.

A third objection is that immediate closure narrows the lumen of the os and hence impedes a discharge of lochia. Those who make this statement confuse the immediate and secondary operation. The immediate operation leaves the cervix as large as a recently dilated cervix which has not been torn. In the secondary operation the operator reduces the lumen of the os at his pleasure.

In appropriate cases, in our experience, immediate closure of the cervix has given no inconvenience to the mother, and has been followed in appropriate cases by excellent results. The operation is not advised for those who do not practise obstetrics with good surgical technique and who are not competent to operate upon the genital tract.

ADENOMATOUS HYPERPLASIA OF THE CERVICAL GLAND
APPENDAGE OF GÄRTNER'S DUCT.

BY

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(With two illustrations.)

THE Wolffian body, or mesonephros, consisting of the Wolffian duct and its series of transverse, short canals, appears in the third and reaches its highest state of development in about the seventh week of fetal life. At this time the Müllerian duct may be seen running to the outer side of and parallel to the Wolffian duct. It crosses the latter and soon reaches the urogenital sinus. In the two sexes these two canals pursue very different courses in development. In the male the Müllerian duct becomes vestigial; the Wolffian duct, on the other hand, goes on to the formation of a functioning canal—the vas deferens—and some of its contributory glands. At its distal end, which here chiefly concerns us, there develops an ampulla consisting simply of a widening of the canal and near it a lobulated pouch—the seminal vesicle. Each vesicle consists of a single tube coiled upon itself and giving off many diverticula—all bound together firmly by fibrous tissue. Uncoiled, the main tube measures about 125 mm. and is of the diameter of a quill. The ducts from the seminal vesicles unite with the corresponding vasa deferentia to form the ejaculatory ducts. In the female the Müllerian ducts develop to form the Fallopian tube, uterus and vagina. The Wolffian duct undergoes profound retrograde changes and is found in adults in the broad ligament, as Gärtner's duct, the main canal of the epoöphoron and paroöphoron. Gärtner's duct, as a rule, runs medially through the central portion of the broad ligament and ends blindly near the uterus. In the vast majority of cases no traces of the duct can be found further than this; it may, however, extend into the wall of the uterus and even into the vaginal vault.

As to the relative frequency of this occurrence, Meyer found Gärtner's duct present in the uterus as follows:

In feti, two to three months, in 12 cases he found the duct in 12 cases, or 100 per cent.

In feti, four to six months, in 21 cases he found the duct in 6 cases, or 28.5 per cent.

In feti, seven to nine months, in 67 cases he found the duct in 11 cases, or 16.4 per cent.

In the new-born, in 18 cases he found the duct in 3 cases, or 16.6 per cent.

In uteri of adults, in 54 cases he found the duct in 12 cases, or 22 per cent.

The results of other investigators vary more or less, but it is probable that these figures are approximately correct. In the 12 cases in which it was present in adults he found it four times on the left side, six times on the right side and twice on both. The duct enters the uterus in the neighborhood of the internal os, or sometimes a little above it. The canal at first runs well to the lateral surface of the uterus. In the cervix it gradually approaches the uterine canal and may lie quite close to it, then it turns, passes outward and upward—where it ends—or it may occasionally pass into the vaginal wall. The course varies considerably, but in general it is to be found in the lateral wall of the cervix, reaching nearly to its lower third. The duct is a narrow, cylindrical canal, usually straight, though sometimes more or less tortuous, which, in the cervix, often widens to an ampulla. In many cases small twigs branch from the main duct, which sometimes becomes cystic. It is only rarely that the number of these small tubules or glands becomes excessive. Two such cases, however, have been reported—the first by Meyer, the other by Thumin. The picture presented by the two is identical.

Meyer's Case—Endometritis cervicis interstit. chron. et cystica. Corpus mucous membrane of the forward and right wall in the middle of the fundus superficially destroyed by carcinoma. In the cervix no Gärtner's duct could be found, but the tissue presented a large number of epithelial cysts exactly similar to those described by Thumin.

Thumin describes his case clinically as well as pathologically. The woman was twenty-one years of age and was operated upon because of a severe infection (probably gonorrheal) of the adnexa. The cervix on examination presented nothing unusual; it was somewhat thickened, eroded, and the external os slit laterally. When the cervix was grasped with the vulsellum it was found to be very friable, so much so, indeed, as to make the bringing down of the fixed uterus a matter of difficulty. The uterus, with the adnexa, was removed by the vagina. Sections were made

of both sides of the cervix, each presenting the same appearance. The cervical glands were somewhat increased in number and showed the usual single layer of columnar epithelium. The stroma was much infiltrated with round cells. A typical erosion presented on the portio. In the stroma a Gärtner's duct was seen running the whole length of the cervix parallel to the border of mucous membrane, 1.4 mm. to 1.7 mm. from it. The canal



Fig. 1.

was surrounded by loose muscle fibers running lengthwise and was paved with a layer of short, cylindrical epithelium. Running at a sharp angle from it and for a short distance straight, were many small tubules dichotomously dividing and forming a myriad of loops and knots. The knotted canals sometimes passed directly from the main canal without the intervention of any straight portion. Over a section which cuts the canals in different directions

they show as small, round or oval epithelial cysts. The width of the canals varies somewhat with the distance from Gärtner's duct, but in general they are similar in size. Their width is from 35 to 40 μ . Here and there they widen to 100 μ . The epithelium consists of one layer of small (highest 13 μ) cuboid, or short cylindrical cells with intensely colored nuclei. The single epithelial elements are of slight development when contrasted with



Fig. 2.

the well developed, high, cylindrical epithelial cervical gland cells. The groups lie thickest near Gärtner's duct. So close do these cells lie to one another that in places no stroma can be made out between them; in more isolated portions a fibrous stroma may be discerned. The masses of canals lie in the intrafascicular spaces of the muscle fibers which surround the main canal. The fibers diverge toward the portio, pressed out of place by the heaping up

of canals. These latter invade the cervical musculature, and one finds, on examination, whole groups of epithelial cysts lying close to the cervical mucous membrane and near the cervical glands. The whole portio is thoroughly invaded, hence its friability. He found the entrance to Gärtner's duct to the uterus on the right side just above the internal os.

The accompanying photographs are from sections given me by Dr. Ludwig Pick. The first shows a section of Gärtner's duct paved with cylindrical epithelium. The cells are slightly higher than those in the tubules and the nuclei are very darkly stained. Their character differs distinctly, however, from the surface epithelium, from the deepest glands of which the canal is distant about 1.5 mm. The tubules lie thickly scattered about this duct, some of them between it and the cervical mucous membrane, others deeper in the stroma. In the same field is a row of these large cysts extending across the field—evidently sections of the same tubule. The second photograph (higher power) shows a group of cysts which are oval, or slightly elongated, depending upon the angle at which they are cut. They are lined with short, cylindrical epithelium of a distinct and uniform character. The cervical stroma, made up of bundles of connective tissue and some muscle fibers running in various directions, is otherwise normal.

Such a condition of the cervix as our specimen presents raises many interesting questions. One might ask whether this adenomatous tissue might not take its origin from the cervical glands. The character of the epithelium is altogether different, the contour, size, and grouping of the cysts are not like that of deeply-seated cervical glands; then again, their position in the stroma about and opening into Gärtner's duct leaves no question as to their origin.

The condition must not be confused with that presented by an interesting group of tumors arising from rests of the mesonephros, or Wolffian body. Von Recklinghausen, in a monograph, in 1896 described fully certain adenomata of the uterus, pointed out their characteristic features, and showed without reasonable doubt that they found their origin in remnants of the Wolffian body. The growths described by him and others since then may be found at any level of the uterus or even in the vaginal vault, but present a totally different picture from that we have before us. The peculiar groupings of the adenomatous substance in islands, the cysts or ampullæ into which open like the teeth of a comb a number of winding tubules, the presence of pigment in the stroma and the

contents of cysts, the presence of much stroma in proportion to adenomatous tissue, would alone distinguish them from ours.

Upon the time in life at which such a hyperplasia takes place, neither of the cases throws any light.

How shall we regard this peculiar growth? It occurs in a position in the Wolffian duct where, in the male the seminal vesicles develop. Is it a rudimentary seminal vesicle? Meyer is inclined to think that the canals arise from a rudimentary ampulla. Thumin states that since the ampulla and the seminal vesicles are both diverticula of the vas deferens, their connection with the seminal vesicles is more probable. Both are inclined to regard it as a hyperplasia of glands rather than a partially developed rudiment, because the arrangement of the glands but very little simulates the appearance of the seminal vesicles. In spite of the dissimilarity, however, we can hardly get away from the facts that they occur in exactly the same location in which we would expect a rudimentary organ; that such a condition has not been observed in any other portion of Gärtner's duct; that the growth seems limited, it never having assumed the proportions of a tumor; that rudimentary organs anyway may vary considerably from the structure of the original.

The finding is of interest to the clinician because of its possible occurrence in a structure under such frequent observation and operation. It is a curious phenomenon, bearing intimate relation to the Wolffian duct—the possible presence of which in the cervix should be remembered.

WONDERLY BUILDING.

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SOME REMARKS UPON PUS COLLECTIONS IN THE FEMALE PELVIC CAVITY, AND THEIR TREATMENT.¹

BY

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THREE score years have passed since James Y. Simpson first challenged the universally accepted teachings of the French school as to the origin and location of pus in the female pelvis. Aran and his pupils had long contended that all accumulations of pus originated in the Fallopian tubes, ovaries, or Douglas' cul-de-sac. Simpson, on the other hand, held that pelvic inflammation had its origin in the pelvic cellular tissue, and gave to this process the name of pelvic cellulitis.

For a time the pendulum of scientific opinion swung far in the direction of Simpson's views, and nearly every accumulation of pus in the pelvis was treated with the distinct understanding that the cellular tissue had been invaded, and was the portal through which infection had entered.

It should excite no wonder that in those days of unrestricted sepsis, such views met with ready acceptance. Cellulitis and phlegmon were indeed of common occurrence. So much were they dreaded by the surgeon, that simple operations upon the pel-

¹Read before the Section on Gynecology, Iowa State Medical Society, May 19, 1904, Des Moines, Iowa.

vic organs were undertaken only as a *dernier ressort*. Through the blood-vessels and lymphatics, wounds of the parturient canal always invite infection of the cellular tissue. With the exception of the gonococcus, the pathogenic bacteria usually prefer to follow these routes of invasion.

A tendency has been shown by many recent authorities, notably by Pozzi, to go back to the radical views of Aran. Pozzi frankly acknowledges that he believes in Aran's theory; and claims that nearly all peri- and para-metric inflammations are merely forms of salpingitis.

Manifestly, neither of the views outlined can be wholly correct. It is true that an extra-peritoneal purulent deposit may rupture into the peritoneal cavity, or a pyosalpinx invade the cellular tissue of the broad ligament, and thus exist together in the same individual at the same time; but there is no reason why each may not exist independently of the other.

Influenced by Pozzi's teaching, I once opened the abdomen for pelvic abscess of puerperal origin, and found the tubes and ovaries normal. Vaginal examination had shown the uterus to be fixed, and a large indefinable mass which I took to be a tubo-ovarian abscess, occupied the left side. The pus, however, was found to be located between the folds of the broad ligament and was easily evacuated by a vaginal incision. Doubtless many cases have been called cellulitis that were in reality ones of salpingitis, salpingo-oöphoritis, or pelvic peritonitis. While it may not be frequently met with in the larger surgical clinics, pelvic cellulitis with subsequent pus formation nevertheless exists as a distinct and separate affection. Cases of infection following childbirth are reluctantly sent by the attending physician to hospitals for treatment. In private practice, puerperal infection still occasionally follows in cases in which the most careful technic has been observed. Unfortunately, however, a stigma of disgrace attaches to the attendant which every practitioner is anxious to avoid, and oftentimes results in his grossly neglecting the case. Therefore, he often prefers to operate himself by incising the abscess, if one forms, which many times is not attended with any difficulty, or else he permits Nature to pursue her course and the abscess gives way at the point of least resistance, which, fortunately, is usually in the vagina, and the case finally recovers. Doubtless many here can call to mind cases of prolonged suppuration from pelvic abscess; the patient subsequently having borne children; which

serves to prove that the tubes could not have been the seat of, or seriously involved in the process.

While pus cases following childbirth infrequently reach the hospital surgeon, salpingitis, following abortion, gonorrhea, etc., are among his most common cases. Hence, the surgeon, very naturally may be led to conclude that invasion of the tubes always occurs in pelvic infection.

It is conceded I believe that the majority of pelvic pus cases coming to the surgeon for operation are of gonorrheal origin. The pus in such cases occupies the tubes and ovaries, constituting the well-known pus-tube and ovary. Comparatively few cases of gonorrhea are treated by any rational method. Many patients are made worse by the daily office treatment. By the majority of physicians, it seems to be taken for granted, that because the patient has gonorrhea, the vagina and uterus must be the seat of the infection. Accordingly, a vaginal speculum is introduced and the uterine cavity scrubbed with some silver solution, thereby infecting a previously healthy vagina and endometrium. The tubes and ovaries in turn become affected, and with a perfectly clear conscience, the case is sent to the surgeon for operation.

There should be but two recognized principles of treating pus in the pelvic cavity. Viz.: 1. By freely incising the abscess at its most dependent point; keeping it open and drained until cured. 2. Total extirpation of the tissues involved. The history of the case will often enable one to select the proper procedure. Thus a severe infection following labor at term, in which forceps were used, or the parturient canal otherwise abraded, is much more liable to invade the cellular tissue than one following miscarriage and retained secundines. In the latter instance, the seat of the infection is usually the endometrium, and the Fallopian tubes are most likely to become the abode of a purulent deposit.

Gonorrhea of the endometrium is practically always followed by infection of the tubes, usually resulting in a pyosalpinx. The gonococcus nearly always travels upon the mucous membrane by a serpiginous process; seldom by way of the lymphatics, blood-vessels or through the tissues by direct contiguity, thus rarely invading the cellular tissue.

Pyosalpinx and pyosalpingo-oöphoritis, I invariably treat by total ablation of the abscess, through an abdominal incision. Vaginal incision and drainage, I do not regard as being well adapted to the treatment of pus-tubes. After the most complete drainage, and closure of the abscess cavity, one is never sure that

all the infective germs have been eradicated. The gonococci especially, may lie dormant for months, and even years, when, under favorable circumstances they may break out anew, causing a most virulent infection. The proximal end of the tube is especially liable to harbor infective germs, and the attack may be renewed, provided a suitable soil is found upon which to grow. On account of this danger, many operators instead of merely ligating the stump, remove a wedge-shaped portion of the uterine cornu. The practice of opening and cleaning out pus-tubes and returning them to the abdominal cavity, which just now is engrossing the attention of surgeons, is in my opinion seldom a justifiable procedure. Do not understand me as stating that I do not approve of conservative operations upon the tubes and ovaries, for unless it may seem to jeopardize the safety of the patient, I always endeavor to leave as much as possible. I am unable to find any report of pregnancy following cases in which resection of well developed pus-tubes had been done. There can be no other reason for doing the operation; there is, however, danger of contaminating the peritoneum, and losing the patient's life.

Vaginal drainage of recent cases of gonorrheal pyosalpinx, if practised before the pus becomes sterile, usually proves to be only a palliative measure, and the pus may sooner or later reaccumulate. Mucous surfaces, such as those lining the Fallopian tubes, when converted into an abscess always prove obstinate in healing. While the pus in old-standing cases of gonorrheal infection is nearly always sterile, and may be spread over the peritoneum without harmful effects, it is not so with the pus from appendicitis or puerperal sepsis, in both of which it is always virulent.

Vaginal incision and drainage, however, is a well-recognized modern surgical procedure; and in properly selected cases brings admirable results. Too many cases, however, fail to obtain permanent relief, the operation either having been faulty, or, as my experience goes to prove usually, they have been improperly selected. Upon secondary operation through the abdomen, I have sometimes found them to represent gonorrheal pus-tubes and ovaries, bound down in an almost inextricable profusion of adhesions, necessitating one of the most hazardous undertakings which the surgeon is called upon to treat. In such cases vaginal incision should never have been undertaken. The abdominal route should have been selected in the first place; when doubtless the complete removal of the abscess would have been easily accomplished. It is true that we now and then meet with profoundly

septic cases *in extremis*, in which, at that moment, it is utterly out of the question to open the abdomen, and the immediate evacuation of the pus by the vaginal route becomes imperative. When the pus is known to be extra-peritoneal, and can be palpated from the vagina there is no question as to the proper procedure. The cervix should be exposed and the posterior lip grasped with a volsella and brought strongly forward, and the posterior vaginal vault opened by a free transverse incision. The vaginal mucosa is reflected backward, and the finger is inserted to outline the abscess. The pus is usually easily located and the abscess may be opened with pointed scissors and the opening enlarged by spreading the blades. Whatever may be the nature of the abscess, whether extra- or intra-peritoneal, tubal or tubo-ovarian, in order to permit efficient drainage it should always be freely opened. Pressure upon the abdomen will aid in expelling the pus. Anesthesia should now be pushed to complete muscular relaxation, and careful search made for other points of fluctuation, and if found they should be treated in the manner outlined. Having emptied the abscess, the cavity is packed with 20-per-cent. iodoform gauze. I like iodoform not so much for its so-called antiseptic properties, but because it is an admirable stimulant to the healing process. The physiological action of iodoform is still *sub judice*. This much we know, however, that free iodine is liberated, which promptly enters the circulation in the form of an albuminate which is a very unstable product. I am inclined to believe that in this form it readily combines with the body juices or defensive lysins, especially in the vicinity of the wound and materially assists their bacteriolytic action. The gauze should be left *in situ* for 48 hours or longer. Much difficulty is sometimes experienced in keeping the opening patulous, especially in tubal affections. The cavity must close from above downward, and the incision must be kept open until this is accomplished. Repacking may necessitate anesthesia. Pryor of New York, Robb of Cleveland and others have treated early pelvic infection by incision into Douglas' cul-de-sac, thereby evacuating any fluid that may be present, after which the utero-rectal space is completely filled with iodoform gauze. Up to the time of the publication of his article in April, 1903, Robb had treated ten cases by this method. In 8 of the cases fluid was found in the cul-de-sac; in one of them 800 c.c. were evacuated. In 40 per cent. of the cases the fluid was of a purulent nature. This treatment protects the peritoneum while purulent matter is escaping from the tubes. How-

ever, it can certainly have but little influence upon the pyogenic process either in the tubes or cellular tissue. The practice of massaging the tubes in order to expel the pus into the uterus, is to say the least, applicable in but few cases, and is laden with danger even in the hands of an expert. Under no circumstances, except perhaps to secure drainage in acute general peritonitis, should the abdomen be opened during the acute febrile stage of salpingitis or pyosalpinx. Indeed, many primary attacks of gonorrheal salpingitis entirely recover without operation. The ostium abdominale becomes sealed up and the pus finally drains into the uterus. The question of hysterectomy for septic peritonitis is still a mooted one. I am convinced, however, that an early operation can save some of those highly virulent and rapidly fatal cases; but to be successful it must be done early, before the defenses of the organism have yielded too much to the invading host. For this operation the vaginal operation should be chosen, since it can be done more rapidly and with much less shock to the system. Hysterectomy secures sufficient drainage, a very important factor in ridding the system of toxins. Like that of drug poisoning, the pathogenic toxins affect the organism in direct ratio to the amount absorbed. Single abscess of the uterus has been successfully treated by Geo. H. Noble by incision, curettage and cauterization of the abscess, through an abdominal incision. Cases in which the uterus is honeycombed with abscesses, admit of but one course, that of total hysterectomy.

Summing up our present knowledge of the treatment of pus in the pelvis, I beg to offer the following conclusions: 1. When pus exists outside the peritoneal cavity, it should be attacked when possible, through an extra-peritoneal incision. Such abscesses readily heal after incision and drainage. 2. Abscesses of the tube or tube and ovary combined, are intractable in healing after simple incision and drainage, and are prone to relapse. By such procedure, the immediate mortality may be lessened, but the morbidity is certainly increased. Total ablation is therefore better surgery. 3. Whether the pus is sterile or not, drainage should follow operations in which the peritoneum has been soiled with pus. 4. When vaginal incision is practised, it must be thorough. Mere puncturing or aspirating the abscess, is a historic relic of surgical impropriety.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY.

(Continued from p. 267, August number.)

DR. ANDREW F. CURRIER, of New York, said that most of the previous speakers had admitted the necessity of immediate repair of the lacerated cervix in case of hemorrhage, but had failed to emphasize the fact that in most of those in which hemorrhage occurred, the most extensive lacerations of the cervix took place, and he thought it was well to bear in mind those coincident facts, because with very many of the general practitioners the fact that hemorrhage occurred was looked upon as being the result of bleeding from the interior of the uterus. The cervix was not examined, and evil results followed any tear which might be present. This might be obviated by an examination in any case in which hemorrhage was present, and a determination made as to whether the hemorrhage came from the torn cervix and accompanying rupture of the artery in the cervix, or whether it came from the interior of the uterus. Immediate repair of the tissues of the pelvic floor was a matter upon which there could be little disagreement, and it seemed to him that any obstetrician was lacking in the performance of his duty if these lacerations were neglected.

As to the effect of lacerations of the cervix following labor, there must be differences of opinion. The fact that trachelorrhaphy had been frequently done was no argument against its performance when extensive lesions existed.

DR. WILLIS E. FORD, of Utica, N. Y., said the question of immediate repair of a lacerated cervix should be left to the individual judgment of the members. On the other hand, immediate repair in the average general practitioner's hands was likely to be attended with disastrous results.

It was not well established that the irritation from a laceration of the cervix produced cancer, although it was said that cancer developed in the cervix in one-fourth of the cases.

DR. DANIEL H. CRAIG, of Boston, Mass., said there was no doubt that the members of the Society could get a large percentage of primary unions without repair; that they could get practically 87 per cent. of primary unions after primary surgical repair, because they did clean obstetrics and clean surgery. The pivotal point regarding the non-healing of a laceration of the cervix was as to whether or not it was clean. If it was clean, it was rather superfluous surgery to subject the woman to an operation for sewing it up when it would heal itself, and the chances were it would heal if clean. On the other hand, if it was not clean, sutures would not force the tear to unite, and it would be rather

unsafe surgery for an unclean man, in the technical sense, to undertake the immediate repair of a lacerated cervix, and moreover it would be useless surgery. Again, it was equally useless, when a woman had a clean cervix, for the practitioner to sew it up, because it would be fully as liable to unite without operation. The speaker found three cases in which there had been violent, quick, rapid labors resulting in extreme lacerations of the cervix, as testified by the scars away up into the vaginal vault. The cervices were voluntarily restored in all three cases without suture, simply because they were clean, no vaginal examinations having to be made.

Regarding the question of carcinoma, in his work of last year he was unable to find one unmistakable instance of this disease developing at the site of a properly repaired cervical laceration. Since then, however, he had received letters from one or two men in which they spoke of the occurrence of carcinoma in a cervix that had been properly repaired.

DR. W. FRANCIS WAKEFIELD, of San Francisco, said if the subject of primary repair of cervical lacerations was looked upon from the standpoint of the teacher, it was dangerous practice for the average general practitioner to repair all lacerated cervixes immediately after labors that occurred in his practice. But if the subject was regarded from the viewpoint of the practice of the members of the Society, he was in accord with what had been said by Dr. Davis, and he made it a practice to repair the cervix immediately after labor, and his results had been practically the same as those mentioned by Dr. Davis. He was a strong advocate of immediate repair of lacerated cervixes.

DR. BACHE MCE. EMMET stated that, from his own observations, it was right to repair a lacerated cervix that was attended with hemorrhage. Most of the ordinary cases of laceration, however, when clean, if the uterus contracted properly, would take care of themselves. Evidence of cicatrices was found in those cases in which there had been quite extensive lacerations, yet no trouble had followed. There were many cases of laceration of the cervix in which no harm had resulted from non-operative interference. The cases he had seen in which operation had been called for had been those in which there had been a lack of repair and great subinvolution remaining.

DR. THOMAS J. WATKINS emphasized the very close relation between endometritis and pathological laceration of the cervix. He said we seldom, if ever, encountered a pathological tear of the cervix in the absence of an endometritis. What was formerly believed relative to eversion of the lips of the cervix and erosion was incorrect. Frequently there was extensive eversion of the lips of the cervix without any erosion. Those were the cases that were unattended by endometritis. In cases of endometritis, with laceration of the cervix, there was nearly always erosion, and the amount of erosion was not necessarily proportionate to the amount of eversion. Consequently, in these cases he believed that the

treatment of the endometritis was quite as important as that of the laceration of the cervix. There were only two indications for remote operations on the cervix—(1) erosion, and (2) marked cystic degeneration.

INTRAPELVIC HEMATOMA.

DR. J. WHITRIDGE WILLIAMS, of Baltimore, reported a case of intrapelvic hematoma following labor, and made some remarks on the treatment of incomplete rupture of the uterus.

PRESIDENT'S ADDRESS.

DR. EDWARD REYNOLDS, of Boston, in his address, stated, among other things, that the use of the printed abstract published beforehand had of late become increasingly prominent in many societies, and in the British Medical Association this use of the abstract had reached its highest point. It was seldom wise to adopt wholesale the regulations of other organizations. It was usually better to let changes follow a more gradual and natural evolution under the needs of the individual assembly, but the methods of the English Association were worth a passing consideration. He said that a Fellow of the British Medical Association who desired to present a paper at one of its meetings must put it in the hands of the Secretary complete and in the form in which he desired its publication, a number of weeks before the meeting, and the communication might be of any length he chose. A paid Secretary, a qualified and experienced medical author, then abstracted each paper in the form and length which he considered best fitted for its public delivery. This official then read the abstracts to the Society as they were called on the program. Such a reading inaugurated each discussion, and the member whose ideas had been thus succinctly set forth before his associates took part in the discussion and closed it. The ideas of individual members by this method were better and more intelligently presented than if they had read their complete papers. Time was economized, full debate was encouraged, and the members had the advantage of publishing to the world papers in which their points were set forth at the fullest length and without time limitation. He recommended that the Society give this method or a modification of it a year's trial.

SYMPOSIUM ON INJURIES TO THE PERINEUM.

DR. J. CLIFTON EDGAR, of New York, read a paper on

THE PREVENTIVE TREATMENT OF PELVIC FLOOR LACERATIONS.¹

IMMEDIATE REPAIR OF LACERATIONS OF THE PERINEUM, WITH
SPECIAL REFERENCE TO PLACING THE SUTURES BEFORE
THE LACERATIONS OCCUR.

DR. LAPHORN SMITH, of Montreal, read a paper with this title, in which he emphasized, first, the importance of closing up even small tears of the perineum so as not to leave raw surfaces

¹See original article, page 49, July number.

for septic absorption; second, the importance of closing large tears so as to retain function of the pelvic muscles. The best time to put in these stitches was just before the head pressed on the perineum, while the patient was anesthetized, and before the parts had lost their relative position. With the left forefinger in the vagina, and the thumb in the rectum, a large perineum needle on a handle was passed just under the vagina, threaded with silk-worm gut, the two or three stitches hung loosely in a Pean forceps until the placenta had been delivered, when they were quickly tied, bringing the parts exactly together as they were before the tear.

IMMEDIATE REPAIR OF INJURIES OF THE PELVIC FLOOR.

DR. HENRY C. COE, of New York, said that he had selected this topic in order to emphasize the fact that by careful attention to puerperal lesions at the time of their occurrence, the patient could be spared much future trouble. He assumed that it was the usual practice of modern accoucheurs to repair injuries to the pelvic floor at once, but it was one thing to suture visible tears and another to repair deeper lesions. Even when perfect union of the lacerations was obtained, the occurrence of prolapsus, cystocele and rectocele months afterward proved that there had been some fault in the technic. The fact of the separation of the fascia and levatores ani muscles must be recognized as well as the superficial tear, especially after difficult instrumental deliveries. An illustrative case from the writer's practice was cited. The tendency of the accoucheur after a tedious instrumental case, in which both physician and patient were exhausted, was to spend as little time as possible in repairing lesions of the soft parts, trusting to aseptic technic to insure perfect healing. The writer was firmly of the opinion that it paid to do the work thoroughly at the time, unless the patient's condition was such as to render delay advisable. He had had such good results from immediate operations that the intermediate did not appeal to him.

In conclusion, he alluded to the fact that the modern accoucheur must be a surgeon as well as an obstetrician. It was expected of him to leave the patient in as good condition as he found her, otherwise he properly laid himself open to criticism.

DR. EDWIN B. CRAGIN agreed with Dr. Edgar that the indications for episiotomy were seldom, if ever, present. Personally, at the Sloane Maternity, he never did it, nor did he allow any of his assistants to do it. As to cleidotomy, all recognized the value of that procedure in narrow pelves, where the shoulders had been delayed in their descent.

In regard to posterior shoulder presentation, he did not believe enough stress was laid upon it by the majority of obstetricians as a factor in the laceration of the perineum.

DR. E. W. CUSHING, of Boston, said it was his practice usually to close a laceration of the perineum before the placenta was expelled. It was merely a matter of ten or fifteen minutes while the woman was deeply under anesthesia; there was no bleeding or

discharge; it was very convenient to utilize the time and avoid hemorrhage by closing any rent there might exist in the perineum then. The question had arisen as to what would happen in those cases in which the placenta came out after the rent was closed. He had found no difficulty whatever in that respect. The opening was as large as it ought to be, even after the laceration was closed.

DR. BACHE MCE. EMMET alluded to over-distention, dilatation of the parts and injuries, the results of which were similar to those from laceration or destruction of tissue. Many of the cases seen in suffering women were lacerations due largely to over-stretching; there was also subinvolution, and in many instances the patients had not been properly cared for. There might be slight adhesions. In some instances cessation of lactation or interference with it was observed from a slight septicemia in nursing babies. The uterus did not undergo the proper atrophy, nor the tissues outside, the vagina markedly so, and if these women were allowed to rest for the ordinary time the parts prolapsed, and results were brought about such as were observed when there had been lacerations of the deeper tissues. Rectocele usually occurred, and the uterus coming down, with a certain amount of sagging, retroversion took place, and the practitioner had to go through the whole process of events to restore the parts to their natural conditions and bring about the results desired.

DR. EDWARD P. DAVIS said it had been his custom to consider expulsion of the shoulder as a very important part of the birth of the child. The anesthesia brought into play to minimize laceration during the expulsion of the head should be continued until the shoulders had been born, and in that simple precaution we had an efficient remedy against extensive laceration by the shoulder. It was his custom to allow the fetal head to be born with due care of the shoulder nearest the external orifice. Sometimes the lower shoulder was the more available; sometimes the upper shoulder could be born first. Delivery of the shoulders was conducted with reference to the position of the child's trunk when the head had been expelled, choosing either shoulder as the case indicated, being careful to carry out some of the manipulations described, raising the head and controlling the expulsion of the fetal body.

As regards the paper of Dr. Coe, it was his experience that a complete tear through the sphincter muscle almost never failed to heal when the laceration was absolutely closed.

DR. ELY VAN DE WARKER said it was a privilege for him to have heard Dr. Edgar's paper, because he had had a strong feeling on the subject of laceration of the perineum, and had taken issue with text-books so long in the past that it was due to the fetal head, that he hoped the matter would come up and be definitely settled that it was the shoulder which was the part at fault in the production of perineal tears.

He did not think he would practice the method proposed by Dr. Smith.

DR. A. F. A. KING, of Washington, D. C., said there was a difference of opinion as to whether the anterior or posterior shoulder should be born first. He did not think there should be any doubt about the posterior shoulder being born first. With this difference of opinion there was, so to speak, a supreme court, the court of Nature, to which the question might be submitted.

DR. HIRAM N. VINEBERG has been following the practice mentioned by Dr. Cushing of putting in sutures after the birth of the child and before the placenta was expelled. This he did in cases of moderate tear of the perineum, where the woman was not exhausted. But in bad cases, such as Dr. Coe had described, he thought the best results could be obtained by doing an operation five or six or twelve days after delivery, unless there was profuse hemorrhage. Then the operation could be done with proper assistance; the operator was in better shape himself, and the patient had time to rally from shock.

The discussion was closed by the essayists.

UNIFORMITY IN PELVIC AND CRANIAL MEASUREMENTS.

In a paper on this subject, DR. A. F. A. KING, of Washington, D. C., reached the following conclusions: "(1) That at present the measurements of the normal pelvis and fetal head are indefinite and unsettled, and must continue so to be, so long as they are determined by our present methods of mensuration. (2) The chief purpose in obtaining the normal dimensions of these structures being for teaching and learning the normal mechanism of labor, it is proposed to adopt an ideal or hypothetical head and pelvis upon the dimensions of which all authorities may agree. (3) In the adoption of such ideal measures it is unnecessary and undesirable to define any measurements with exact precision—no fraction smaller than a fourth of an inch, or than half a centimeter, in the metric system, being required. (4) Race variation forms no real obstacle to the proposed plan, and other apparent difficulties can be overcome."

Finally, should the proposition meet with approval, it was suggested by the author that the Society take the initiative in bringing the matter in proper form before some forthcoming international medical congress for general adoption.

Accordingly, a committee was appointed by the President to consider the matter of uniformity in pelvic and cranial measurements, and report at the next annual meeting.

The committee consisted of Drs. King, Williams, and Davis.

SYMPOSIUM ON THE VALUE OF NON-OPERATIVE LOCAL TREATMENT IN GYNECOLOGY.

The first paper on

NON-OPERATIVE LOCAL TREATMENT IN GYNECOLOGY

was read by DR. WILLIS E. FORD, of Utica, N. Y.

He said no one would deny that greater good had come from surgical treatment of diseases peculiar to women than was ever

dreamed of by the early gynecologists who did not operate. No comparison of results could be made. He did not think it was true, however, that the specialty ought to become purely surgical. Pathology learned by pelvic and abdominal surgery ought to be clearer and better than was ever discovered post-mortem. It was fair to assume that men who did this work could have a better idea of the natural history, progress, and dangers of these diseases than those who did not operate; and that, therefore, early treatment ought to be in the hands of men who were also doing surgical work.

The nervous habit could not be cured by surgical procedure. What was commonly called neurasthenia was not a disease, but was an established habit, possible only to those who had from birth an unstable or weak nervous constitution. Before the mental symptoms began was the time to prevent neurasthenics from becoming permanent invalids. That the nervous habit could not be cured by surgery had been proven by the fact that the removal of diseased ovaries, and such like operations in epileptic women had not cured the epilepsy or neurasthenia. The argument, therefore, was that in those ailments that tended to disturb the emotions, especially those of the reproductive organs of men or women, the serious thing was not the pain experienced, but the permanent invalidism which was brought about by the protracted local sensations, which in time disturbed the mental equilibrium, and brought about the invalid habit. These local irritations ought to be treated by skilled gynecologists, and not allowed to develop either the mental or physical ailments which were so common a result. These arguments were enough to make us revive interest in non-operative procedures. Recent displacements, especially in young people, and acute infections were mentioned as demanding non-surgical care early, if the gynecologist desired to avoid the more serious ailments, and especially the most serious of all, the mental disorder called neurasthenia.

THE VALUE OF NON-OPERATIVE LOCAL TREATMENT IN PELVIC DISORDERS.

DR. WALTER P. MANTON, of Detroit, Mich., said that there were three factors which, among others, were largely responsible for the neglect of medical gynecology: (1) The average physician's lack of knowledge in the accurate diagnosis and local treatment of pelvic disease. (2) The allurements and fascinations of surgery. (3) Competition in the field of practice.

In the best of hands the results from local treatment in pelvic diseases were frequently slow in manifesting themselves, and discouragements were often met with, but in suitable cases persistent effort would ultimately attain the desired end. The objects of local treatment were the relief of pain and irritation, often of a reflex nature; the allaying of congestion and inflammation; the absorption of the products of inflammation, and the reposition of displaced organs. For the regulation of the uterine functions, in

congestions and mild inflammations of that organ and surrounding parts, and in displacements of the uterus, with and without adhesions, the application of proper local treatment was of signal value; while in prolapse of the tubes and ovaries, even in the presence of extensive adhesions, but without ascertainable morbid changes in the organs themselves, vaginal tamponade offered the simplest and most efficient means of reposition and cure.

TREATMENT PREPARATORY TO OPERATION.

DR. HENRY C. COE, of New York, introduced his remarks with the statement that while his early training had led him to believe that such treatment was practically indispensable in cases of so-called "cellulitis," subsequent experience had convinced him that this notion was not in accordance with pathology or common-sense. He had expressed skepticism on this subject as long ago as 1886, when he read a paper on the "Exaggerated Importance of Minor Pelvic Inflammation," and subsequent experience had only served to confirm his opinion that old pelvic exudates and adhesions were not *per se* a contraindication to operations on the uterus. Modern aseptic technic was a sufficient safeguard against danger from this source. The reader contrasted the old practice of keeping the patient in a hospital for several months, with the preparatory treatment between each minor operation, with the present plan of performing combined operations at one séance and sending the patient out in three or four weeks. He questioned the actual value of the hot vaginal douche, local applications to the vaginal fornix, treatment of the ectropic cervix, etc., previous to trachelorrhaphy, since the diseased tissue could all be removed at once by amputation. At the same time, he admitted the remarkable results often observed as regards the absorption of extensive pelvic exudates. Acute and subacute inflammation in and around the adnexa formed the real contraindication to operation, and doubtless surgeons were not always as careful as those of the former more conservative generation in selecting their cases. Competition and the rush of modern life were responsible for some ill-advised operations, minor, as well as major.

In regard to major operations, the reader thought that, excluding pus cases, general preparatory treatment of the patient was rather more important than local. He believed, however, that the admirable results obtained by the pioneers in the treatment of vesico-vaginal fistulæ were due to careful preparatory treatment, such as the division of cicatrices, stretching of the vagina, etc. Fortunately, we were seldom called upon to handle such complicated cases as those described by Sims, Emmet, and Bozeman. With all our improvements in technic, we had not yet outgrown all the wisdom of our old teachers.

THE VALUE OF POST-OPERATIVE LOCAL TREATMENT.

DR. J. RIDDLE GOFFE, of New York, said the experience of all observers was that local treatment relieved congestion, pain and

discomfort, inaugurated, hastened, and accomplished the absorption of edema, plastic exudate, adhesions, and pseudo-hypertrophy. If it would relieve these conditions, how much more certainly would it prevent them? It had been found serviceable in preventing the deposit of plastic exudate and the reformation of adhesions in cases in which these were present at the time of operation. It was especially valuable in cases subjected to vaginal section for the relief of sterility.

The author reported several instructive cases to substantiate the points made in his paper.

DR. HIRAM N. VINEBERG thought the point determining the value between local treatment and operative treatment could be settled when the time the disease had existed was considered. If one took the acute conditions, and these were the ones that were amenable to local treatment, it was his conviction that many of the cases met with in practice could be averted if followed properly. He was rather going back to the method of doing different operations on the pelvic floor or several operations upon it at different sittings. He thought better results could be secured if one did not attempt to do too much at one operation. In laceration of the cervix, with large cystocele and rectocele, he had been satisfied with simply repairing the anterior vaginal wall and cervix at one operation, leaving the perineum for a second operation, and he had obtained better results by so doing.

DR. BACHE MCE. EMMET emphasized the importance of preparatory treatment, and said that better results would always be obtained by such treatment. He had seen many women who were operated upon too early, in view of the quick beneficial results that were supposed to follow, but in whom the same symptoms persisted after the operations were performed. These patients should go through a period of what might be called preparatory treatment, and the papers of Drs. Ford, Manton and Coe were directed along the right line.

DR. SETH C. GORDON stated that what was called chronic inflammation was simply a condition of things consequent upon the product of inflammation, a chronic passive congestion, and a chronic passive congestion in organs that were hyperplastic, like the uterus, could be relieved so much quicker by an operation which cut the vessels that were enlarged, and let out the blood, and then the patient began to get into a good condition. Those who had operated for hyperplasia of the uterus, taking out a wedge-shaped piece from each side, had noticed within a month that a uterus which measured five inches on the inside had diminished four inches. Certainly, the chronic passive congestion was relieved by the operation. The acute congestion was relieved, which was more or less induced by the operation that was performed for the chronic condition.

DR. HERMAN J. BOLDT felt that if there was no place for local treatment in gynecology, gynecologists had better relegate themselves to the line of surgeons and call themselves surgeons only.

He was confident that those who observed their patients carefully realized that there was a place for local treatment, for general treatment, as well as for surgical treatment.

DR. ANDREW F. CURRIER said that if a patient was in an inferior physical condition, the wise thing was to have her undergo some sort of hygienic preparation before subjecting her to an operation, whatever the nature of it might be.

He thought there was more to be said on the subject of post-operative treatment than most of the members realized. Those who observed cases carefully knew that after some abdominal operations there followed a condition which left the patients as uncomfortable as they were before, and digital examination revealed a condition which would seem to be almost the same as before operation. There was an exudate, there was sensitiveness, present, and such cases as that could be relieved by some form of post-operative treatment. But he did not think, as a matter of routine, the members would be justified in adopting these measures—in fact, it would be a confession that the operative measures proposed would be insufficient and unsatisfactory.

The discussion was closed by Drs. Ford, Manton and Goffe.

THE IMPLANTATION OF THE HUMAN OVUM IN THE UTERUS.

DR. CHARLES SEDGWICK MINOT, of Boston, gave a talk on this subject, by invitation. Among other things, he stated that the human ovum produced upon its exterior during its earliest stages of development a thick layer of cells, trophoblasts. The function of the trophoblast was to corrode away a portion of the mucous membrane of the uterus, making a cavity in which the ovum lodged itself. The trophoblast thereupon underwent a hypertrophic degeneration, such as to produce a series of irregular spaces which persisted and became the intervillous spaces of the placenta. Papillary outgrowths of the chorionic mesoderm meanwhile penetrated the trophoblast, initiating the formation of the chorionic villi. The trophoblastic cells over each mesodermic outgrowth persisted in two layers, the inner cellular, and the outer syncytial. These two layers represented the first stage of the villous ectoderm. Similar observations had been made on primates and were compared with those upon the human subject. The author compared briefly the method of implantation in man with that in other animals, to show that the trophoblast was of general occurrence, and that by destroying uterine tissues it inaugurated the formation of the true chorionic placenta.

DR. J. CLIFTON EDGAR, of New York, read a paper entitled

BATHING DURING THE MENSTRUAL PERIOD.¹

DR. J. RIDDLE GOFFE said that he had advised constant bathing during the menstrual period in the following way: If girls or women were in the habit of taking a regular tub bath every morning, either hot or cold, he had inculcated the idea that it was wise

¹See original article, page 356.

to continue these through the menstrual period, and he had been able to induce a large number of women to adopt that practice. He saw no reason why the habit of life should be changed in regard to bathing because the menstrual period had come. While he had kept no actual record of the number of women who had adopted his suggestion, he had yet to report any unpleasant experience from so doing, and he knew a great many had followed it. He had also instructed women who had children to adopt that practice with their daughters, saying that their girls ought to continue it even when puberty arrived and after menstruation had become established. It had always seemed to him that if there was any time in a woman's life when she needed to be cleanly, it was when she was menstruating, as it was known at that time glands of the skin, especially of the axillæ and groins, were very greatly stimulated. They excreted probably at that time more nitrogenous detritus from the wear and tear of the body than at any other time; and there was an unpleasant odor about most women. He saw no reason why a woman should cover herself with perfume and carry attar of roses in her underclothes during that period any more than we should cover up infection by deodorizers.

In regard to dysmenorrhea, he had obtained most satisfactory results from hot tub baths. He used the hot tub bath constantly in such cases; in fact, he advised that treatment more than any other for the relief of dysmenorrhea.

DR. SETH C. GORDON stated that when questioned by women and girls as to whether they could go in bathing at the seashore during menstruation, he had invariably answered, no—never, under any circumstances.

If there was one thing that was valuable in relieving dysmenorrhea in the early stages, it was a hot bath, and he meant a bath as hot as the patient could tolerate it. He knew of no one thing that had been so beneficial as that. It relieved internal congestion: it brought the blood to the surface. The patient should be instructed to lie in the hot water for ten minutes or more. What he liked still better was to adopt the Swedish mode of giving a hot bath; that is, after the hot bath, part of the hot water should be let out, and then the cold water facet turned into it, thus cooling it off gradually. By so doing, the skin was toned up better than if the patient was given a hot bath and then went to bed. As a means of relief, it was very much superior to giving opiates or anything of that sort. He had found it invaluable in the cases of a certain class of girls and women. As to the remainder of the period, he always advised cleanliness about the axillæ, groins, vulva, and external parts with warm water.

DR. BEVERLY MACMONAGLE, of San Francisco, said that on the Pacific Coast, when patients asked him if they could go in bathing during the menstrual period, he invariably told them, yes. The Pacific Ocean around San Francisco and Monterey Bay was colder than the Atlantic Ocean was during the summer months,

and sometimes the temperature of the water would be as low as 54°, and some of the most healthy women he knew were accustomed to bathe in that water through the menstrual period. He was first impressed with the impunity of bathing in the surf by observing the women in Honolulu. The women in the Hawaiian Islands went into the surf every day, all the year round, sometimes five or six times daily. If a woman felt hot and uncomfortable, she went in and lay around in the water.

Another custom of the women of Hawaii was to go in bathing immediately after the delivery of the child. Many of them were delivered out in the open air by the seaside, and after delivery they walked into the sea and bathed until the flow had ceased, and they came out feeling entirely comfortable. One would naturally think that there would be evil consequences about this custom, and that great harm would follow its practice. But it was not the case, as the Hawaiian women were fine-looking specimens of womanhood.

DR. EDGAR, in closing the discussion, said the matter of bathing during menstruation was brought to his attention about two years ago, when he received many inquiries from patients demanding some relief and departure from their usual custom. But the question arose more particularly from the standpoint of athletics.

There was a difference of opinion regarding salt water bathing. He had a number of patients who bathed in the waters of Long Island Sound and the South Shore, with comparative impunity. He also had patients along the Jersey Coast who could bathe with impunity during menstruation, and yet some of his patients who went to the North Shore or New York Harbor had trouble from suppression or dysmenorrhea if they indulged in surf bathing.

Regarding infection, he did not think there was any risk in sea bathing. However, he fully believed that there was a certain risk in pregnancy, because water could open the cervix, the woman could have a raw cervix during menstruation or a wound, and that being the case there was a possibility of infection from that source, and so long as there was this possibility, he believed the woman should avoid it, if possible.

DR. HUNTER ROBB, of Cleveland, Ohio, read a paper on

THE STREPTOCOCCUS IN GYNECOLOGICAL SURGERY.¹

DR. CHARLES P. NOBLE, of Philadelphia, read a paper entitled
NATURE OF INDICATIONS FOR OPERATION IN FIBRO-MYOMATA OF
THE UTERUS.

The author presented a table of the degenerations and complications in a series of 1,188 cases of fibroid tumors operated upon by Martin, Noble, Cullingworth, Frederick, Scharlieb, and in a series reported by Hunner and MacDonald. Especial attention

¹See original article, page 187, August number.

was called to the relative frequency of adeno-carcinoma of the uterus as compared with epithelioma of the cervix. The deduction drawn from this fact was that fibroid tumors were a direct predisposing cause of cancer of the cervix. A careful consideration of the facts presented, said the author, should convince anyone with an open mind that the classical teachings concerning fibroid tumors were erroneous. These teachings were that fibroid tumors of the uterus were benign growths, which usually produced but few symptoms, and which after the menopause underwent retrogressive changes, becoming smaller or disappearing; that the chief danger of fibroid tumors consisted in the fact that at times they caused hemorrhages from the uterus, and that rarely they caused trouble because of their size or on account of pressure on adjacent viscera. An analysis of the 1,188 cases showed that because of the degenerations in the tumors about 16 per cent. of the women would have died without operation; about 18 per cent. would have died from the complications present. In addition, it was well known that a certain percentage would have died from intercurrent diseases brought about by the chronic anemia present in many of these cases, and by injurious pressure from the tumors upon the alimentary canal and urinary organs. In short, at least a third of the women having fibroid tumors, as shown by the author's table, would have died had they not been submitted to operation.

DR. J. WHITRIDGE WILLIAMS said that in general he agreed with the deductions of Dr. Noble, although from another point of view he would say that the majority of cases of myoma of the uterus should be operated upon. He would not be willing to accept the statistics as offering a ground for so doing. Take carcinoma of the corpus of the uterus, and epithelioma of the cervix; he thought carcinoma of the cervix should be regarded as a purely accidental complication, and that carcinoma of the body of the uterus should be regarded in the same light. The reason that carcinoma of the cervix was so much more frequent than carcinoma of the body of the uterus was due to the fact that we did not examine large numbers of uteri in a systematic manner, and the reason there was such a large frequency of carcinoma of the body of the uterus in the tabulation was due to the fact that in the eleven hundred uteri examined the women were in middle life, and it represented in a fair way what one would find in women who developed carcinoma. The only malignant growth one could attribute to the myoma itself was the sarcoma. There was no doubt that in a certain proportion of the cases sarcoma was undoubtedly derived from the myoma, and might be derived from the connective tissue between the muscle bundles, although in occasional cases, as he had demonstrated, the sarcoma cells might be derived from the individual muscular fibers.

There was one point he would like Dr. Noble to speak of in closing the discussion, and that was, he had had two cases in his last batch of thrombosis of the vessels of the lower extremity. He asked if in this large number of cases there had been a number of

cases of thrombosis of the pulmonary vessels, with fatal pulmonary embolism. So far as he had been able to learn, a fibroid tumor sometimes produced a condition which favored thrombosis in the pulmonary vessels.

DR. BEVERLY MACMONAGLE said it was hardly fair to include carcinoma, epithelioma, and chorio-epithelioma as consequences of fibroids. These were entirely independent growths. The fact that a fibroid might degenerate into a sarcoma was sufficient cause for looking upon large fibroids as serious, and we should remove small fibroids with symptoms for surgical reasons, as he thought in the end a large number of patients would be placed in a better condition, and operation in the early stages of the fibroid would give a higher percentage of recoveries and lessen the risk or danger to the life of the patient.

DR. SETH C. GORDON stated that his experience of forty-nine years had afforded him very few cases of pregnancy occurring in women who had fibroids of the uterus. The number of women who had died from neglected fibroids of the uterus far exceeded the number who had become pregnant with fibroids, so that while the gynecologist might occasionally save a child which was valuable to the mother and father, he would more often lose the mother, the wife, who was more valuable to her husband and family. When it had been taught in the Society that we could remove large fibroids from the uterus and then do a ventro-suspension, it seemed to him that was conservatism of organs, and not conservatism of the health of the woman, which we were all after. Conservative gynecology was that which conserved health and nothing else. He did not believe that we were justified in going into a uterus half a dozen times to remove one fibroid at a time, when it was known that the reproduction of fibroids was so common. A fibroid uterus might contain a dozen little tumors which one could not find when he did his first myomectomy. Taking all the chances, especially illustrated by the statistics of Dr. Noble, he was ready to say that when a woman came to him with a fibroid that was making her an invalid, he advised her to have a hysterectomy done, so as to get rid of all her troubles. The mortality was so small that one could hardly estimate it in connection with this operation.

DR. EDWARD P. DAVIS said it would be interesting to have a statement of the mortality of operations for fibroids, and it would be fair to compare it with the mortality occasioned by complications.

As to pregnancy, as an indication for operating for fibroids, it seemed to him that considerable judgment was required in this matter, for the reason that pregnant women with small fibroids were seen and known to pass through pregnancy without trouble, and in whose cases after the birth of the child the fibroid itself, so far as external examination was concerned, disappeared. He thought it was a fact from observation that such women might even bear other children, and we could not in all cases trace this

fibroid to a rejuvenation, and some of these women did not come to operation. In other cases pregnancy and the presence of a fibroid or fibroids furnished an indication for immediate operation, as in a case that occurred a few months ago, where a pregnant woman had a fibroid infiltrating the right broad ligament. The situation of the fibroid was such that it seemed questionable whether she could bear a child through the vagina. Consent to operation was obtained, with the promise that the uterus would not be removed if it could be avoided. When the abdomen was opened, the situation of the tumor was such that delivery through the vagina would have been impossible, and hence she was subjected to hysterectomy.

DR. JOHN F. THOMPSON, of Portland, Maine, said, in reference to salpingitis, in his own personal experience, in looking up the matter some time ago, he found something like 20 per cent. of cases in which there had been pyosalpinx, not all of which were explained at the time of operation, but apparently had been from the gross or macroscopic appearance cases of actual accumulation of pus in the tube. He would like to hear the experience of other Fellows with reference to that, and whether it had been a factor in determining these operations. He had found women suffering acutely where a fibroid existed, and it would seem to him to have been due in these cases to the presence of a fibroid.

DR. LAPHORN SMITH stated that at one time he opposed the removal of the uterus for fibroids, but his reasons were fair and definite, as at that time the mortality was high, and when Apostoli discovered the electrical treatment of fibroid tumors of the uterus, he went to Paris, learned and practiced it on his return to Montreal, and knew that he made a great many women comfortable without having removed these tumors. While doing this, the mortality was gradually falling, and when he found that it declined to less than 10 per cent., he was inclined to recommend the removal of the uterus. Pregnant women were put to a great deal of trouble by the presence of fibroids complicating pregnancy, particularly when accompanied by symptoms, and when operation was indicated, they should be removed. He had seen the symptoms disappear after the removal of these fibroids. He had also seen albumin, which had been present in the urine, disappear after the removal of the fibroids. He did not believe in operating on them the first time he saw them. He kept the women under observation and treatment for months before he decided upon doing a laparotomy. If the patient, at the end of this time, was not getting better, then he urged hysterectomy, and he believed it was the wisest course to pursue.

DR. HOWARD A. KELLY thought this was one of the most important subjects the members could discuss, because if the opinion went out generally that because a patient had a fibroid it was an indication *per se* for operation, practitioners would be operating upon hundreds of cases with small fibroids that gave little or no

trouble, and which were often accidentally discovered at autopsy. Dr. Kelly then discussed briefly the general indications for operation. One ought to make sure that a woman has a fibroid, and in some cases doubt existed, as had been proven by operation. He thought, however, this could be determined by putting the patient under an anesthetic, and making a careful exploration, particularly by the abdomen and rectum. Furthermore, one ought to be reasonably certain that there were no complications. If there was malignant degeneration on the side of the endometrium, it would show itself by hemorrhage, and curettage would determine it. No one would contend that such cases should be operated upon unless the indications were plain. There might be a tumor or appendicitis, or some other complication, but we could generally make sure of this by a careful history, a careful examination, the location of the pain, swelling, etc. He felt that many cases were operated upon, not because of the presence of a fibroid complicating pregnancy, but on account of an ovarian tumor or dermoid cyst, and in one case in which carcinoma of the ovary was suspected, a fibroid as large as one's fist was discovered accidentally. He had had about a thousand of these operations.

He felt that operating on fibroids complicating pregnancy was very much overdone. He operated on cases himself years ago when he felt they ought not to have been operated upon. He had seen in consultation cases with large masses of fibroids, necessitating premature labor, in which operation had been urged, and yet some of these cases had been returned to their homes and had had normal labors.

DR. NOBLE, in closing the discussion, said it was agreeable to him personally to find that in general the speakers believed as he did, that if a woman had a fibroid tumor it should be taken out.

The reason the table was compiled was this: The classical teaching was and had been that women with fibroid tumors were not sick. But the 1,188 women who had these tumors and all the complications enumerated in the table were surely ill. To prove this was the object in compiling the table.

The next point was the relation between fibroid tumors and cancer of the corpus of the uterus. He was not attacking the accepted theory that sarcomas could develop only from connective tissue, and that carcinoma was developed from epithelial structures. That was not the point. The point was that in this series of cases the normal relation between the number of cases of cancer of the cervix and the number of cases of cancer of the corpus was vastly altered from the usual, and as the number of cases was very large, it seemed to him, *à priori*, a reasonable deduction that the irritation produced by the fibroid tumor in the uterus was a predisposing cause for the development of carcinoma of the corpus uteri.

Cancer of the corpus uteri was just as common with small fibroids as with large ones. So far as this particular feature as to the relationship between fibroid tumors and cancer of the corpus

was concerned, it had been shown by Cullen that there was a direct relationship between the two. This was a relative reason for operating on small fibroids as well as large ones.

As to the mortality of operations for fibroids, he did not feel that it was necessary to go into that phase of the subject, as the Fellows were all familiar with it. However, his own opinion about the mortality was that if operation was done early, it was about one per cent., but when done at a later period, it might be five or ten per cent., or even thirty per cent., depending upon how desperate the case was when seen.

As to the remarks of Dr. Kelly, it was quite evident that his (Kelly's) view of the subject of the indications for operation on fibroids was absolutely opposed to his, and his own feeling was, after studying the matter carefully, that Dr. Kelly's position was not scientific. He believed we should operate on these tumors because it was known what happened in the life-history of them, and it was far safer to take them out; the woman's chances for good health were far better when they were out than they were when the tumors were allowed to remain.

THE TREATMENT OF GONORRHEA.

DR. HENRY T. BYFORD, of Chicago, in a paper with this title, said there was dissatisfaction with prevalent methods. The desideratum was a local remedy that would rapidly destroy or remove the germs without injuring the protective epithelium, and a method of application that could be used by the patient which would not carry the germ to a deeper portion of the genito-urinary tract. He advocated prolonged irrigations with hot water as a basis, and spoke of frequent injections of hot water as a substitute for prolonged irrigations. He detailed his experience with urethritis in the male, and spoke of hydrogen dioxide and unirritating germicidal solutions as a substitute for plain water injections, and gave their application to gonorrhea in the female.

The advantages of this treatment when used early he summarized as follows:

- "1. It prevents the spread of the disease to adjacent parts.
- "2. It does not injure the epithelial covering, and thus it tends to limit the infection to the superficial areas.
- "3. It removes more germs and pus cells than either astringents or disinfectants can destroy. It acts in the same way as constant irrigation, both in aborting and arresting the progress of the infection.
- "4. It can be used more frequently than astringents or strong germicides, so that the parts can practically be kept free from pus and germs all of the time, while the method of using germicides or astringents three or four times daily allows the germs and pus to accumulate and spread between injections.
- "5. In the male, and possibly in the female, peroxide injections may be substituted when the time and facilities for the hot water treatment cannot be had. When the discharge has become scanty and the injections cannot readily be used so frequently, a non-

irritating solution of a silver salt can follow each hot water or peroxide treatment.

"6. It may be used in connection with alphozone injections for the dissolving of germs and culture material not eliminated by the douches.

"7. It possesses all of the advantages of the expectant treatment, namely, it does no harm. It can be combined with the internal or local medication when it becomes impossible to carry it out with the necessary time-consuming detail. It exemplifies the superiority of asepsis to antiseptis."

OFFICERS.

The following officers were elected for the ensuing year:

President, Dr. E. C. Dudley, Chicago, Illinois; Vice-Presidents, Dr. Henry D. Fry, Washington, D. C., and Dr. Henry C. Coe, New York; Secretary, Dr. J. Riddle Goffe, New York; Treasurer, Dr. J. Montgomery Baldy, Philadelphia.

Niagara Falls, N. Y., was selected as the place for holding the next meeting, in 1905.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of May 10, 1904.

The President, DR. GEORGE W. JARMAN, in the Chair.

RUPTURE OF THE 'LOWER UTERINE SEGMENT DURING DIVULSION; HYSTERECTOMY; RECOVERY.

DR. HENRY C. COE showed a specimen with the following history: A. B., æt. 20, married, entered his service at Bellevue Hospital April 14, 1904. She stated that a conservative operation on both ovaries had been done in July, 1903. One tube and the appendix were removed at the same time and ventro-fixation was performed. She had an early abortion two months before entrance, since which time she had suffered with constant pain in the right ovarian region. There was profuse menstruation in March. On examination a cystic tumor the size of an orange was felt to the left of the uterus which was fixed in an anterior position. Leucocytosis 8,000. Pulse and temperature normal. Operation was performed April 20. In divulsing the cervix with a steel dilator, previous to curettement, although no unusual force was used, the branches of the instrument suddenly separated widely and profuse hemorrhage followed which was easily controlled with a tampon.

The abdomen was opened, adhesions around the adnexa were separated and it was found that the right ovary had undergone complete atrophy, while on the left side was a small cystoma. As the uterus was soft and considerably lacerated it was decided to do a radical operation. On separating the bladder on the left

side an extensive rupture of the uterus was found extending above the os internum (two inches in length) and just missing the uterine artery. The operation presented no difficulty, the usual gauze drain was inserted and the patient made an uneventful recovery. The specimen was interesting not only as illustrating the secondary degeneration of ovarian remains after a conservative operation, but from the presence of the traumatism resulting from careful use of the steel dilator. The reporter said that a similar accident had happened to him on two or three previous occasions without bad results. In one instance he had seen with a colleague a patient, whose left uterine artery was completely severed and the peritoneal cavity entered posteriorly, during divulsion previous to curettement for incomplete abortion. The artery was held between the thumb and finger of the operator for nearly half an hour until a clamp could be procured. A drain was placed in the wound and the patient made an afebrile recovery.

DR. HERMANN J. BOLDT.—I do not think that rupture of the uterus is always the fault of the operator. Although, upon bimanual examination, the organ may appear to be of normal consistence, it is at times so friable that an instrument will go through it, without direct pressure. I again saw a case recently where the curette, merely by its own weight, passed through the uterine fundus.

ACUTE PYELO-NEPHRITIS; NEPHRECTOMY; RECOVERY.

DR. H. C. COE showed a specimen with the accompanying report: Mrs. S., æt. 40, married, entered his service in the General Memorial Hospital February 16. She gave a history of previous gonorrheal infection and an attack of peritonitis after the birth of her third child seven years before. An explorative section had been advised on account of persistent colicky pains in the abdomen, with apparent thickening of the tubes. No history of tuberculosis; physical examination of chest and abdomen negative; urine normal. On opening the abdomen slight omental and intestinal adhesions to the fundus uteri were separated and the appendix was removed, the tubes and ovaries not being disturbed as they were not diseased. Curettement and perineorrhaphy preceded the laparotomy. Except for a rise of temperature to 101.6 on the sixth day (due to a small stitch abscess) the patient's convalescence was normal. The patient's general appearance was bad and she failed to recover her strength though she had no pain. On the 28th day (after she had been up) her evening temperature rose to 102 with a pulse of 130, and she complained of severe pain over the right kidney. Examination negative. Though the average daily amount of urine since the operation had been only 30 to 40 ounces repeated examinations were made with negative results.

On the twenty-ninth day the temperature ranged from 100 to 103.8 degrees. On the 31st it remained below 100. Leucocytosis 16,000. The next afternoon after a marked chill, it rose

to 104.2 (rectal), the pulse being 138. A second chill followed an hour later with an elevation to 104.8 and a return of the pains in the right kidney. On the following day it was 105.2 at 2 P.M., dropped to 100.8 at 8 P.M., and following a chill rose to 104.8 with a pulse of 140. Leucocytosis 15,600. No plasmodia. It had now become evident that the right kidney was considerably enlarged and was probably the seat of infection, the origin of which could not be discovered. After consultation I decided to make an explorative renal section, which was done on March 24th. Through the usual lumbar incision the large highly congested kidney was exposed, and it was found that the pelvis and ureter were dilated. The ureter was traced down to the brim of the pelvis where a constriction was found. The kidney and 6 inches of the ureter were easily removed. On section the organ was found to be riddled with small abscesses, the pelvis and ureter being filled with pus. Drainage with gauze and rubber tubing was provided. The patient made a rapid recovery, and there was no change in the daily amount or character of the urine, showing that the left kidney had been doing all the work from the outset. The pathologist could discover no evidence of tuberculosis. No calculus had been discovered, and the origin of the infection has remained a mystery. The patient began to improve at once and her convalescence was uninterrupted until the 14th day, the wound having almost healed, when her temperature rose to 104, pulse 136, leucocytosis 13,000. It dropped to 99.2 on the 16th day and remained low for several days, with slight variations, so that she was allowed to sit up. She then began to have an evening rise to 101 degrees, but her general condition was excellent. She was discharged on the 28th day after the operation.

The interest of this case turns to the question whether it was not really tubercular in spite of the negative evidences. In no other way could we account for the return of the fever after the wound had healed and the patient was in such good general condition. At the same time the original infection seemed to be too acute to be explained in this way. The patient's physician reports that she still has an occasional rise of temperature.

DYSTOCIA DUE TO FETAL ASCITES.

DR. GEORGE L. BRODHEAD.—The patient, a primipara, 18 years of age, native of Germany, was seen in the first stage of labor in the outdoor service of the Post-Graduate Hospital. Her height was about $4\frac{9}{12}$ feet and she weighed about 96 pounds. She had not menstruated for three months, but the fundus uteri reached a point five fingers above the navel. The patient stated that labor had been in progress twenty-four hours, with severe pains at irregular intervals. The presentation appeared to be breech, and the heart was heard in the upper left quadrant. Palpation and auscultation were difficult on account of the tense condition of the uterine and abdominal walls. The vaginal examination showed the cervix to be about three fingers dilated, and the pre-

senting part above the brim felt through the membranes like an edematous breech. The patient was in excellent condition and was allowed to go on for some hours longer but finally, no advance having been made in the meanwhile, I was sent for to see the patient.

The membranes had ruptured several hours before my arrival and the cervix had become very edematous. The fetal heart could not be heard, and as the patient was distinctly tired out it was thought best to operate at once. Under ether the cervix was thoroughly dilated and the presentation found to be a fluctuating tumor, evidently fetal in origin. The right hand of the operator was passed upward into the uterine cavity and the lower extremities were found to be high up in the right half of the uterus, the head and chest at the fundus, but the arms of the child could not be felt for the reason they were flattened out against the chest and abdomen by the pressure of the head which was well flexed, the face looking downwards and to the right. With a pair of scissors the abdomen was punctured, and a little over a quart of clear yellowish fluid escaped. After the fluid had drained away, the fundus came down to a point $2\frac{1}{2}$ inches above the pubis, and a few good contractions resulted in the expulsion of the fetus, head last. A typical hourglass contraction of the uterus made manual extraction of the placenta necessary, but the condition post-partum was excellent. The placenta showed marked calcareous degeneration on both of its surfaces, but seemed normal in other respects. The fetus was about $5\frac{1}{2}$ —6 months and there was a thick caput in that portion of the abdominal wall which presented in the half dilated cervix, the puncture having been made at the center of the edematous swelling. Dystocia from fetal ascites is an unusually rare condition, and occurring as it did in a patient advanced only to the sixth month the case was of very great interest.

DR. WILLIAM S. STONE.—I was much interested in this specimen. About a year ago I met with a similar condition. The case was a shoulder presentation, and the membranes had been ruptured for some time. There was no particular difficulty in the delivery, although the abdomen of the fetus was considerably distended. I was unable to secure complete autopsy, but by an incision through the umbilicus I discovered the cause for the distention. There was a very large number of mesenteric cysts.

DR. FRANKLIN A. DORMAN.—The only similar specimen I have seen was at the Sloane Maternity, about two years ago. The patient in that case gave a rather characteristic history of syphilis. She had had three normal deliveries, and then four which were described to be of this nature. In the specimen which I saw, the fetus was about seven months, the breech presenting: there was a condition of marked hydramnios, the child's abdomen was enormously distended, and there was some hydrocephalus. As the abdomen passed through the pelvis, the child suddenly popped out and fell to the floor, slipping through the accoucheur's hands.

The placenta had to be removed piecemeal, and was an enormous mass of fatty tissue, weighing over four pounds.

I have been led to believe that most of the cases of this nature are of syphilitic origin.

DR. BRODHEAD (closing the discussion).—Knowing that syphilis is a frequent cause of this condition, the effort was made to obtain such a history, with negative results. A considerable number of cases of fetal ascites cause no trouble during labor, but a dystocia due to such a cause is extremely uncommon as early in pregnancy as five or six months.

VERY LARGE GALL-BLADDER CONTAINING 182 BILIARY CALCULI.

DR. HERMANN J. BOLDT.—Mrs. A. C., æt. 47 years, had pain in the right iliac fossa with elevation of temperature, at times to 104° F., for several months. On May 2 the attack was unusually severe and accompanied by chills and much fever, 104, and severe vomiting. Examination showed a large tumor most prominent on a line midway between the anterior superior spine of the ilium and the umbilicus. It was very sensitive to the slightest pressure. The diagnosis of an acute suppurative inflammation of the gall-bladder was made. On operation the intestines and omentum were found to be moderately adherent to the greatly distended gall-bladder. The width of the fundus was about $3\frac{3}{4}$ inches. After aspirating the muco-purulent secretion, about 120 c.c., extirpation was done. Two stones which were impacted in the common duct were gradually pushed out. Convalescence is progressing favorably.

VERY LARGE SUBMUCOUS MYOFIBROMA UNDERGOING COLLOID DEGENERATION, AND PRACTICALLY CAUSING NO SYMPTOMS.

The tumor was discovered accidentally about two years ago, that being the length of time frequent micturition had been complained of. The patient, a virgin 40 years old, has lately complained of a feeling of extreme exhaustion and such frequent micturition that it amounted to incontinence at times. Menstruation occurs at intervals of four weeks, continues six days and is profuse, with large clots. Otherwise the history is negative. The abdomen is filled entirely by a tumor which extends nearly to the diaphragm. The findings permit a diagnosis of interstitial myoma. Albuminuria is present with some granular casts in the urine. The blood shows 40 per cent. hemoglobin. On opening the abdomen about 1,000 c.c. of golden yellow ascitic fluid of the consistence of cream, escaped from the peritoneal cavity. The bladder was drawn acutely over to the right side and upwards, making almost an acute angle. This probably accounted for the bladder irritability. It is interesting to note that such a very large tumor should exist without causing serious symptoms, especially bleeding and contractile pains at the menstrual period, because, as may be seen in the specimen, the tumor is entirely submucous. The peculiar ascites is probably due to the beginning degenerative changes in the tumor and to pressure.

THE PRIMIPARA IN OBSTETRIC PRACTICE.

DR. FRANKLIN A. DORMAN.—In the care and guidance of a woman in her first pregnancy lay far-reaching results. Failure in this trust might mean loss of life of the mother or child or chronic invalidism of either, perhaps the beginning of domestic unhappiness, or such an experience to the mother that by her own will her first child remained the only one. It was by better care of these cases that the physician could exert his influence against the modern tendency to small families among the upper class. The first pregnancy and labor were, as has often been expressed, "the testing of the woman." Safely through this ordeal confidence could be expressed about subsequent labors. If she failed in the first ordeal the story of such failure would be a guide in future accouchements. The physician assumed the responsibility of seeing the primipara through pregnancy, labor and puerperium and of discharging her at the end of that period as well as when she came to him at first, and perhaps a stronger, healthier, and better developed woman than before.

In contrast to this women were frequently coming to the gynecologist with the story that their menorrhagia, dysmenorrhea, leucorrhea, or bearing down pains dated from their first labor. That these patients were a diminishing proportion was a tribute to more careful and better obstetrics in recent years. Sepsis was avoided, lacerations prevented or promptly repaired, displacements corrected and invalidism rendered unfashionable.

It was not the intention of the paper to contend that the care given the primipara differed in any essential from that given the multipara, but to contrast in a general way the variations in the labor of these two classes, and to place emphasis on the points where the primipara might need special attention. Such a woman lacked experience and was often woefully ignorant of the commonest physiological necessities of her being. Regular examination of the urine was often entirely ignored, and the prospective mother might overeat and avoid exercise until she approached labor with flabby muscles, and with a child too large for normal delivery. On the other hand she might exercise to excess, might repeatedly expose herself for a long time to the evil effects of bad air in shopping or theater-going. Experience, at times bought with most disastrous results, taught her a wiser course of living.

Every physician should remember in his supervision of a first pregnancy that severe toxemia was by a large percentage more apt to be her special danger. In a series of 12,000 cases at the Sloane Maternity Hospital, 70 per cent. of the cases of eclampsia were among primiparæ. Why this tendency exists had not been satisfactorily explained. Increased pressure on the ureters was said to be one cause. Pernicious vomiting among the Sloane Maternity cases was about equally divided in frequency between the primipara and the multipara.

Nervous symptoms were more pronounced among primiparæ.

The mild form of chorea, usually a relic of the same disease in earlier years, was more commonly seen.

In other respects the discomforts of the first pregnancy might be greater than those of subsequent ones. More pressure on the colon was due to the firmer abdominal wall, and hence there was more constipation. There was greater unwieldiness from increased and unaccustomed bulk resulting in the change from the maidenly type to the matronly; a widening of the chest, a general deposit of subcutaneous fat, especially about the hips and breasts. Anemia at this time was more often encountered. The readjustment of the organism was a more difficult matter with the elderly primipara whose tissues had become hardened. In such patients gastric troubles, other discomforts and eclampsia were much more frequent.

Looking at the brighter side in primiparæ as compared with multiparæ we rarely saw varicosities, accidental and unavoidable hemorrhages quite unusually. In a series of 12,000 consecutive cases accidental hemorrhages were as one to two in favor of the primipara, and placenta prævia in proportion of one to eight.

During pregnancy the primipara needed careful watching. An examination of the chest, abdomen and pelvis should be early and thorough. The size of the child the woman was apt to have, the muscular and nerve force that she would display in labor, the amount of resistance that the passages would offer could only be partially learned from examination. Of such information as could be secured the physician should possess himself. The exact degree of pelvic contraction, if present, must not be overlooked; although in such cases the first labor often offered the best chance for a successful delivery. This was probably due to the fact that the first child was usually smaller and that the head engaged in the pelvis earlier in pregnancy and that the abdominal muscles were firmer and stronger.

In diagnosing pregnancy in the early months the breast signs were distinctly of value in primiparæ, but could not be relied on in subsequent pregnancies.

For four weeks antepartum the head often nestled low in the pelvis, sometimes almost on the perineum; local pressure symptoms were thereby exaggerated: constipation, incomplete emptying of the bladder, hemorrhoids and pains or muscular cramps of the lower extremities.

It was in labor that the difference between the primipara and multipara was most marked. The resistance encountered in the soft parts made the labor in primiparæ almost twice as long. The first stage of 16 hours was more nearly the primipara rule as compared with nine hours in subsequent labors. In many cases an excessive rigidity combined with inefficient pains protracted the first stage to twenty-four hours or more. In a series of 2,000 deliveries at the Sloane Materhity 105 were prolonged beyond thirty-six hours; of these 32 were multiparæ. A long first stage added to the danger from exhaustion, longer exposure to possible infec-

tion, and the necessity for operative interference. These were the times that required great tact on the part of the physician. If by any safe means the tedious stage might be shortened and the severe suffering lessened the doctor owed it to himself as well as to the patient to see that it was done.

It might take months to recover from the shock of a difficult labor on a delicate nervous system, and the woman would remember it long enough to relate her harrowing experience to some other primipara. The average woman of the upper classes needed the experience of two labors before she could be induced by the ease of the second to approach subsequent labors with reasonable confidence.

As regarded the second or expulsive stage the primipara was again at a disadvantage. Time must be taken to safely accomplish dilatation and to mold the fetal head so that it would offer the least circumference in exit. A second stage of over an hour was not uncommon. The demand for strong muscular effort came when the woman was least able to respond to it. Nearly 50 per cent. of the leisure classes needed forceps in order to terminate their first labor. Among hospital cases he had employed forceps in 11 per cent., and 9 per cent. were primiparæ. This represented nearly one forceps case in every five deliveries. In contrast to this a physician in a remote mountainous district reported 300 cases in which he had gotten along successfully without forceps. In theory the more athletic life of our women should improve our statistics, and yet he had had a golf champion, a fairly young primipara who had one of the most rigid cervixes that he had ever seen. The mechanism of labor was more apt to be normal in the first labor due to the better muscular support both from the abdominal wall and from the pelvic floor. In a few cases from the cervix being displaced backward, the uterine forces acted in the wrong axis, and until the cervix was pulled forward in line, little progress was made. At the vulvar outlet the risk of perineal tears was three times as great in primiparæ. The fourchette was torn in over half of the cases. There were frequent splits of the mucous membrane on the inner surface of the labia minora or even tears into the vestibule. The liability to external wounds increased the risk of infection. After forty years of age at least two-thirds of primiparæ demanded operative delivery.

The child of the primipara had not as hopeful a chance for life as subsequent children. The long second stage might result in intracranial hemorrhage or similar danger from forceps delivery. Uterine action was helped by getting the patient to walk about, and by strychnia and quinine as stimulants, or by temporary rest by chloral or opium if exhaustion threatened. For persistently rigid cervix the modified Champetier de Ribes bags were invaluable. If digital dilatation was necessary it should be employed cautiously and under an anesthetic. He said it should be our aim to bring the woman to the second stage with sufficient reserve force to assist with the voluntary muscles efficiently in the act of expulsion.

If the os was posterior to the direction of the forces of the uterus, it must be drawn forward. An edematous cervix must be pushed back over the head during a pain. During the second stage some women were much helped by encouragement and by being taught the proper use of the abdominal muscles. He believed that a bag of membrane that persisted after complete cervical dilatation should be ruptured. In case of inertia with the patient in good condition better pains might be secured by allowing the woman on her feet for a short time. If suffering were very intense the acme of the pains might be dulled by whiffs of chloroform. It was during this stage that there was the most danger from shock. Although some time must be allowed for molding the head and for dilatation of the soft parts, there came a time when further delay was wrong. The avoidance of laceration must be kept entirely subsidiary; in fact a long delay with the head on the perineum was often the cause of serious laceration because of the edema following the prolonged pressure. No general rule could be laid down for the proper time for forceps interference. If at the end of an hour pains were still effective and the head advancing there might still be some delay if the fetal and maternal pulse were good. Other cases demanded assistance earlier because of the condition of the mother or child.

A forceps operation was slightly more difficult on a primipara, especially with respect to the introduction of the blades. If the head was high up in the pelvis, the perineum was somewhat in the line of direction for proper traction, unless axis traction forceps were used. The use of forceps in unskilled hands in such cases gave a large percentage of serious lacerations. A breech labor exposed to unusual risk in a primipara as there was almost a certainty of vulvar or perineal tears. There was also a greater liability to abnormal attitude of the fetus in primiparæ. Extension of the legs along the body was met with in over one-half of primiparous breech labors, but in less than one-third of similar multiparous labors.

Methods of avoiding perineal lacerations were almost as numerous as obstetricians, but a few principles were generally accepted. The advance of the head might be regulated and usually slowed by pressure or support of the head during a pain, and often by some control of the pains by chloroform. The natural mechanism of extension of the head might be assisted in some way and it was safer to finally deliver the head by pressure while the woman was unconscious from chloroform. Many, in addition to the above, used some form or other of perineal support. He thought that the immediate repair of perineal tears, even though slight in extent, was desirable. Cervical tears must be left for at least 48 hours until the edema had subsided, and unless the operator was very competent it was better to leave them for secondary operation, because of the danger of puerperal infection, or from imperfect uterine drainage.

As there was greater likelihood of exhaustion in the primipara

so was there greater liability to postpartum hemorrhage. Sloane Maternity Hospital statistics showed that postpartum hemorrhage of twenty ounces or over was three times as frequent there among the primiparæ as among the multiparæ. The tendency to lacerations, hemorrhage or instrumental deliveries made the woman more liable to sepsis. His hospital statistics showed that 60 per cent. of infections were among primiparæ. There had been a great improvement in this respect but obstetricians had still to account for a considerable morbidity from mild sepsis, which often left the woman with chronic endometritis, or other pelvic trouble that endowed her with partial invalidism and sterility.

With the exception of after pains the discomforts of the puerperium were greater after the first labor. Breast complications were frequent. As a suppurative breast at this time would probably throw out of function that breast through all future lactations, our precautions against breast infection should be more stringent.

From the longer pressure of the second stage there was a larger percentage of cases demanding the use of the catheter.

Getting up after labor depended upon the rapidity of involution and the absence of complications. In the healthy primipara it might be allowed sooner than in the multipara. From the tenth day on, the possibility of retroversion of the uterus should be kept in mind; this was the time to prevent or cure this condition, first by preventing recurrence; if it had existed before, by making the woman change her posture; or if it had recurred, by tampons and later by the use of a pessary. The patient should be warned against unusual exertion during the entire period of the puerperium.

The patient that went forth from her first childbirth in a condition of semi-invalidism due to endometritis, uterine displacements, or results of laceration or sepsis carried, though she might not realize it, a severe indictment against the skill of her attending physician.

DR. CHARLES JEWETT.—Dr. Green of Boston and others have recommended a combination of hyoscine and morphine hydrobromate as an obstetric analgesic. My assistants in the hospital have reported excellent results with it. The dose is 1-200 grain of hyoscine with 1-6 grain of morphine.

For prevention of perineal tears a method that has given me good results is an old but a good one. The patient, when practicable, is delivered on a table. A towel is laid over the pelvic floor. Over this the thumb of one hand is laid along one side of the vulva and the fingers along the other, the palm of the hand resting over the space between the anal and the vaginal orifices. The strain on the soft parts of the resisting girdle is reduced by pressing the head well up into the pubic arch at expulsion. Time, of course, must be allowed for the soft parts to stretch and the mechanism must be regulated.

A word with reference to forceps: Forceps are used with vary-

ing frequency by different obstetricians. While I would not belittle the value of forceps my own belief is that at least in general practice they are used too often. The following illustrates a method that I have frequently substituted for forceps. About a month ago I confined a spare, ill-nourished woman, who had had many miscarriages. Pregnancy went along smoothly only after a course of mercurials. The head was in the cavity in the right occipito-posterior. After 48 hours in labor her pulse was nearly 100 and her strength threatened to fail. This was a typical case for forceps. The interests of the mother and child were, I believe, better served by delivery as follows: The patient was placed on a table and the anesthetic given in obstetric fashion by an expert. An extra nurse, well skilled in obstetric manipulation, applied vigorous *expressio fetus* while I managed the head. By this method, with competent help, delivery may often be completed as quickly and with more safety to both patients than with forceps. It has served as well in many cases.

DR. J. CLIFTON EDGAR.—I am very much in accord with what Dr. Dorman has said, and I think we ought to be grateful to him for presenting so many practical points in this very extensive field, covering, practically, three subjects, namely, the management of labor, pregnancy and the puerperium.

I wish he had emphasized a little more strongly the question of the management of pregnancy under those conditions where the woman is referred to the obstetrician at an advanced stage of pregnancy. Some of them, perhaps, expect to be confined within two or three weeks, and while they may not have been neglected by their attending physician, they have not received the care that they should have had. The kidneys may be in bad shape, or there may be symptoms of toxemia. This custom of referring these patients to the obstetrician at a very late date is not as common now as it was some years ago. The general practitioner is getting to appreciate more and more the importance of treatment during pregnancy, and when we reach that point where the pregnant woman will receive the care and attention that she deserves, we will have fewer complicated labors, and fewer deaths from eclampsia and hyperemesis gravidarum.

I am not exactly in accord with what Dr. Dorman said in regard to the significance of mammary changes in primiparæ. They are important, of course, in connection with other signs and symptoms, but I have seen cases of dysmenorrhea with mammary changes which at least approached those we get in gestation.

I am quite in accord with the method described by the reader of the paper in delivering the head, and would even go a step further and speak of the delivery of the shoulders. To my mind, the shoulders are responsible for a large number of perineal lacerations. How often we see a laceration of the first degree in a primipara converted into one of the second or third degree by the birth of that posterior shoulder. This particular point, I believe, has not received the attention it deserves. During the

past few weeks I have had occasion to look up the subject, in view of writing a paper that I expect to present before the American Gynecological Society, and among the recent textbooks only two or three give distinct directions in regard to the birth of the shoulder. While a page or more is devoted to the birth of the vertex, only half a dozen lines are given to the shoulders. I could only find one book in which specific directions were given as to whether the anterior or posterior shoulder should be delivered first.

The subject of elderly primiparæ is a very interesting one. We have been led to believe in the past that after the age of 38, or 39, or 40, the primipara will have a very hard time. I cannot help but think that there has been some exaggeration as regards the duration of the labor in these cases, and in my experience it has not been much longer than in women under the age of thirty. Of course, when we make such a statement, we must bear in mind that elderly primiparæ must be helped considerably, especially in the manual dilatation of the vulvar outlet. I have in mind the case of a woman about 41 years old, the wife of a physician, where it seemed absolutely impossible that any fetus could pass through that parturient outlet without wrecking the whole pelvic floor. I proposed that we put her under ether and dilate the parts, and within thirty minutes, by means of dilatation and excentric massage so much was accomplished that with the aid of forceps we got the head through without any laceration.

As regards the frequency of hemorrhage in primiparæ, I am inclined to believe that the bleeding is at least partly due to laceration of the cervix, which at times causes a pretty sharp hemorrhage.

In the management of the puerperium, I thoroughly agree with Dr. Dorman in regard to the importance of changing the posture of the woman. By doing this, we may prevent subsequent uterine displacement. Later on, I believe that massage is very valuable for the purpose of securing good involution of the uterus. You take a healthy woman, who has been accustomed to a good deal of exercise, and who has not been confined to bed for many years, and massage seems to relieve her of the to her unnatural rest of the puerperal condition.

I believe in encouraging the patient during the second stage of labor. A woman who has never had a child does not know how to bear down or to take a full breath, and if she is properly instructed in these particulars and they are properly carried out, in a goodly number of cases I am firmly convinced they will render the use of the forceps unnecessary. It is during this stage that a woman is inclined to become discouraged and hysterical, and with a little proper teaching of how to use the abdominal muscles and how to breathe we can sometimes help her a good deal.

DR. ROBERT A. MURRAY.—Dr. Dorman's paper has brought before us a subject which we consider we know everything about,

yet it is useful to go over knowledge which we already possess, and see if there is anything we can add to it, and thereby secure greater safety to our patients.

I was interested in listening to Dr. Edgar's statement in regard to the dilatation of the vulva. I have resorted to that method to a great extent in primiparæ, usually waiting until the head reaches the floor, and then, when the patient is under an anesthetic, it can generally be carried out with great effect.

Delivery of the shoulders is a very important point. I agree with Dr. Jewett that it is better to deliver the posterior shoulder first, but we cannot do that unless we know where the head is. Where the arm is up by the side of the face, it should be liberated.

One point that I did not hear mentioned was that an occasional examination of the fetal heart should not be omitted. That is an important factor in determining whether we should interfere or not. After the child's head has been delivered, the pains usually cease for a time, and in that interval the chest may be so firmly grasped that death seems imminent. If the pressure is prolonged without any action of the uterus, the resuscitation of the child may be difficult, if not impossible, on account of the compression of the chest. Just as soon as the head is delivered, the mouth should be cleared, so that the child will not suffer from the inhalation of the discharges. The eyes should also be washed to prevent future trouble.

After the head and the posterior shoulder have been delivered, there is nothing that will take the place of good, skilful expression of the uterus.

Very frequently, during the puerperal state, the patient complains of pain and distention of the abdomen. This is usually the result of indigestion, and is apt to be very annoying from the third to the fifth day. Massage of the colon and along the sigmoid flexure is very efficient in relieving this pain, and by doing this, we will obviate the necessity of giving drugs, which should be avoided, if possible. The bowels should be relieved by light laxatives.

I have had some experience with the use of morphine and hyoscine as an analgesic in labor, and have usually found the combination very efficient.

DR. BRODHEAD.—I think that we can all agree that Dr. Dorman has selected a most practical subject for his paper. In the practice of obstetrics there are many dangers which we should seek studiously to avoid. In many instances the practitioner is unwilling to devote the time which is necessary to carefully observe his patient, and he takes too much for granted in the management of pregnancy. When the patient makes her first call upon the physician she is advised to send for him when her pains begin and, in some cases, not until that time does arrive does the woman come again under observation. To obtain the best results, patients should be made to report regularly to the physician at stated intervals.

In regard to the use of forceps I think that in the city we are compelled to use them more often than in the country. I have met men practicing in the country who have told me that they rarely used forceps; but in my own practice I use them in primiparæ in at least two out of three patients. While in some of these cases the use of forceps may not be imperative, I see no harm whatever in their judicious use and, in some cases, the patients are saved hours of unnecessary pain. In dry labor, especially in primiparæ, forceps should be used much earlier than in normal cases, for the reason that fetal asphyxia develops earlier and, in some instances, forceps must be used early in the second stage in order to avoid stillbirth from this cause. We can encourage our patients considerably and it is our duty to do so. The other day I was called to see a woman who was found to be in the second stage of labor. She had been in pain for only four or five hours, but it was evident that that patient had not been properly instructed how to bear down, and when she was shown how to do this, and provided with means by which she could assist herself, good progress was made at once, the case terminating spontaneously in a comparatively short time.

A subject that has not been mentioned to-night is episiotomy. I believe with Dr. Jewett that this is a very valuable operation and that it is not performed as often as it should be. This applies particularly to primiparæ. During the past few years several elderly primiparæ have come under my care and in two of these it seemed best to do episiotomy. In both instances the result was most excellent and, as I look back over the past, I can remember a number of cases, both in hospital and in private practice, where extensive perineal lacerations have occurred, tears which I now believe should have been avoided by the early use of episiotomy.

With reference to sepsis it may be stated without fear of contradiction that the number of examinations per vaginam made during labor is very much greater than it should be, and that in the majority of the cases the diagnosis of presentation and position can be made perfectly well by external manipulation alone. Again, if the presenting part is engaged in the pelvic brim, there is no necessity of examining for a prolapse of the cord, for the accident will not occur under these circumstances. After delivery many patients are not examined unless some complication arises. This is a grave error for thereby abnormal conditions are not discovered, and instead of discharging our patients in good condition, as Dr. Dorman says we should do, we leave the woman with a subinvolution, or a uterus in mal-position. When these conditions are present appropriate measures should, of course, be instituted for their relief.

DR. ARTHUR M. JACOBUS.—Dr. Dorman's paper has covered the subject under discussion thoroughly, with one exception, and that is, he did not refer to the part the nurse plays in obstetric practice. Of course, in hospital work every thing is prepared

according to rule, and labor goes on smoothly, but in private practice we sometimes have to deal with so-called nurses who seem to be old family relics, handed down—like the old blankets and rubber sheets in use—from generations back, or often with graduate nurses with ideas which run contrary to ours.

I think a great deal of the sepsis occurring in private obstetrical practice is due to the ignorance, negligence or officiousness of the nurse. Last year I delivered the wife of a physician, a man of large obstetric experience. The patient developed more or less cystitis after her confinement without apparent cause, and I did not learn until months later that she had been regularly catheterized by the graduate nurse for a week or ten days subsequent to the birth of the child, on the ground that it was the proper thing to do. This was done with precautionary instructions from me not to do so at the time of labor, and yet the patient, her husband and the nurse kept me in ignorance of the fact.

In another case, seen last winter, the patient developed a fever on the fifth day after confinement, her abdomen became tender and she had a peculiar vaginal discharge without apparent cause, the labor having been perfectly normal. I did not learn the cause until months later, when told by the husband that the nurse, a hospital graduate, had taken it upon herself to give the patient a douche twice daily with a strong solution of corrosive sublimate, using one of the ordinary seven and one-half grain tablets to the quart of water, and thus causing mercurial poisoning. These tablets the nurse had in her possession, and had advised the patient to use them subsequently after coitus to prevent future pregnancy.

In another case, upon her own authority, the nurse advised the patient not to take the ergot ordered to be given in 15 drop doses three times a day and also kept the patient covered with heavy blankets in a warm room to cause excessive sweating which she said was necessary during the entire lying-in period; and afterwards, in order to "harden her" as she said, directed the patient to go about the cold apartment with nothing on but her tea-gown and an undervest. This resulted in a nearly fatal cold. In still another case I ordered a solution of lysol one dram to a quart of water for a vulvar wash and to be poured between the labia after each urination. The nurse with a large obstetric experience thought this was too strong and substituted a solution of ten drops to the quart as I learned later. In another case the patient developed sepsis which I am sure was due to infection from the nurse, who, as I subsequently learned was menstruating and also suffering from salpingitis, excessive leucorrhea, and a large uterine fibroid tumor, and naturally had to care for herself at the same time she was taking care of the patient.

All the points touched upon by Dr. Dorman in his paper are important, but we must not forget to look after the nurse, whether she is a graduate or not. I do not care how intelligent the nurse may be I do not think she knows more than the attending physi-

cian although she may think she does from having been an obstetric nurse for a few years.

I recently had a difficult labor case, a primipara of 37 years, in which our fellow member Dr. William S. Stone kindly helped me with forceps. At one o'clock in the morning while awaiting the coming of a competent hospital nurse who had been engaged, as I had understood, I was astonished to see walk in instead a woman seventy years old whose services had been engaged later on the advice of a relative. This woman thought she knew it all but proved to be utterly incompetent, though she had been a nurse for thirty-five years. Similar cases could be cited ad infinitum. Do not take it for granted that the nurse will always carry out your instructions whether a graduate or not, or that she will not take it upon herself to act without instructions, and worst of all that the patient will not be a party to any deception.

Possibly the only remedy will be to decline to attend a patient in labor unless she will agree to have, first, a competent nurse whom you can trust and, secondly, to agree that the nurse shall carry out your instructions, or that you will be informed at once, not months later, of any negligence or officiousness.

DR. BOLDT.—Dr. Dorman has covered this subject so thoroughly that I have only a few comments to make. I would like to ask the author's reasons for giving strychnine and quinine to strengthen the pains? I believe our present views are that no oxytocic should be used under any circumstances unless we are sure that we can terminate the delivery at our own will.

Second, I question the wisdom of rupturing the membranes in a case where the cervix is still rigid, because there is nothing better with which to dilate an undilated cervix than the unruptured membranes.

DR. W. S. STONE.—When Dr. Edgar expressed regret that Dr. Dorman had not spoken of the treatment of the primipara during her pregnancy, I thought he would supply the deficiency and give us some practical points on the subject. I cannot do so, but I think that it is one of the points that deserve careful consideration. I can only suggest three practical points: (1) The avoidance of over-eating. (2) The avoidance of over-excitement. (3) To prevent these patients from attending crowded public places.

There was one other point referred to by the reader of the paper with which I cannot agree, although I think his view is in accord with that generally held. I consider a laceration of the cervix vastly more important than a laceration of the perineum, and I believe that ten years from now the majority of obstetricians will regard it in that light. I think the effect of a laceration of the cervix upon involution of the uterus and upon its subsequent position is of infinitely more importance than a laceration of the perineum, and in regard to its repair I have come to the conclusion that it is proper and obligatory that the ruptured cervix of a primipara should be immediately sutured, the same as any

other wound in the body. I do not believe in waiting for 48 hours for the edema to subside. In a normal case, the edema is nothing more than a congestion, similar to what is observed in the perineum, and I am in favor of suturing the laceration immediately if I am in a position to do so. As for the danger of sepsis, I regard immediate suture as one of the best ways to prevent it.

DR. FRANK R. OASTLER.—Among the out-door patients at the Vanderbilt Clinic I have seen many women who have no scar or external tear of the perineum, but who suffer from relaxation of the perineal floor. It has occurred to me that a great deal of this relaxation is due to the effort on the part of the obstetrician to avoid tearing the perineum externally, and in doing this he has succeeded in lacerating the levator ani muscle subcutaneously, and the pelvic floor consequently gives way. If this explanation is correct, it would seem that a tear of a few centimeters externally would be preferable to a subcutaneous laceration of the fibers of the levator ani, for in the former condition the repair could be easily made, whereas in the latter the injury would often be overlooked and would be the cause of much trouble later in life.

DR. EDGAR.—I may have been misunderstood in my remarks regarding the treatment of pregnant women. What I wished to state was that it was necessary to do something more than to merely examine the urine once or twice a week, and lay down general instructions as to diet and fresh air. These women cannot be satisfactorily treated by mail or through the telephone. They must be seen at regular and frequent intervals.

DR. DORMAN (closing the discussion).—I think the aid to delivery mentioned by Dr. Jewett, namely, *expressio fetus*, is a very important one, and am sorry it was omitted from my paper. It has never seemed to me to be useful, however, unless it is aided by uterine contractions. If by stimulating the uterus we can get it to contract, and then use force in this way it will be of great service.

Concerning the birth of the shoulders, we can only give our own experience. I have always obtained the best result by delivering the anterior shoulder first, so that it actually appears under the symphysis, using it as a lever and then delivering the posterior shoulder. Manual dilatation of the vulva I have never employed: I shall be interested to try it, and see what can be accomplished, but I have always felt that with the head we obtained the ideal dilatation. It gives better and more even pressure than the hand.

In regard to the importance of watching the fetal heart, I mentioned that in my paper. We must admit that the use of chloroform has its dangers in primiparæ, and probably the increased number of post-partum hemorrhages in those cases was partly due to the use of that drug. Episiotomy I have never employed either in hospital or private practice, although I recall

seeing one case in the hospital in which the result of this procedure was good.

As regards the obstetrical nurse, I do not think we can give the responsibility to any of them. We must give them explicit instructions and take the responsibility upon ourselves. Catheterization, douching, etc., should only be done by the doctor's orders.

In reply to Dr. Boldt's question I would say that I believe only those oxytocics are contra-indicated during labor that cause tonic contractions of the uterus. Quinine and strychnine simply strengthen the muscles and impart a good rhythmic action. I know of no contra-indication to oxytocics of this sort. Those of the ergot class should never be given until the uterus is empty. The membranes, of course, should not be ruptured until there is complete cervical dilatation.

Dr. Stone outlined one or two important points in the care of the woman during her pregnancy. In order to avoid toxemia we should insist upon free action of the bowels and perhaps give a good liver tonic once a week. I did not mean to belittle the importance of cervical lacerations, but I have my doubts as to the good results following immediate repair of such tears. There is usually a good deal of edema present, and the sutures are apt to exert either too much or too little tension.

Relaxation of the perineum due to prolonged and persistent efforts to save it from laceration I suppose occasionally happens. It may be that in certain cases we spend too much time in trying to get the head out without a tear. This should be guarded against.

As regards intercourse just prior to delivery, it would at times be a great comfort if we could trace a case of sepsis to that factor. I have had patients ask me to advise them as to the safety of having intercourse during pregnancy, and perhaps some instruction on this point would not be amiss, but I do not think there is much risk of infection from that source, especially among the better class.

My paper was necessarily sketchy in character, as it covered so much ground, but I have tried to touch on the main points concerning the welfare of the primipara during her pregnancy and labor and the puerperium.

REVIEWS.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., assisted by H. R. M. LANDIS, M.D. Volume II. June, 1904. Surgery of the Abdomen, including Hernia; Gynecology; Diseases of the Blood; Diathetic and Metabolic Diseases; Diseases of the Spleen, Thyroid Gland, and Lymphatic System; Ophthalmology. Pp. 334. Lea Brothers & Co., Philadelphia and New York, 1904.

This volume is the one of greatest importance to the gynecologist, three-fifths of its space being devoted to abdominal surgery and gynecology. The publication maintains its well-known standard of excellence.

THE THEORY AND PRACTICE OF INFANT FEEDING. With Notes on Development. By HENRY DWIGHT CHAPIN, A.M., M.D., Professor of Diseases of Children at the New York Post-Graduate Medical School and Hospital, etc. Second Edition, Revised. Pp. 342. With numerous illustrations. New York: William Wood and Company, 1904.

The tendency to complexity in percentage feeding is so great that it is difficult for the average practitioner and mother to apply. The writer believes that the chief question is how to obtain clean, fresh cow's milk, and this he discusses at length. It is well to think in percentages, but simplicity of technic is more important than minute differences in theoretical percentage. The chemical processes of digestion and the chemistry, bacteriology, production, preservation and methods of testing milk are described. Cereals, proprietary infant foods, eggs and meats are also discussed. After a practical chapter on breast feeding, the subject of artificial feeding is taken up, theoretically and practically. The chapters on preparation and selection of food contain in clear and sufficiently concise form, all the practical directions which the physician needs for infant feeding. The method recommended for modification of milk is valuable for its simplicity. It is to mix, for young infants, one part of nine-ounce top milk with three to eight parts of diluent, and add one part of granulated or milk sugar to twenty or thirty of food. For older infants, one part of sixteen-ounce top milk is mixed with one to two parts of diluent, and one part of sugar to twenty or thirty of food is added. In every instance a weak mixture is first used and then the dilution is gradually decreased. The diluents employed are water, barley water or oatmeal water, or dextrinized cereal gruels which are the writer's preference. The modification may be still further simplified by use of the "Sloane Maternity

milk set" as described. The chapter on selection of food discusses the changes in diet necessitated by digestive disturbances. Constipation, summer diarrhea, and feeding after the first year are subjects of sufficient importance to be treated separately, and growth is briefly considered.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Treatment of Extrauterine Pregnancy.—P. Sfameni (extract from *Rassegna d'Ostetricia e Ginecologia*, 1903) says that to decide what kind of intervention should be done it is necessary:

1. To differentiate extrauterine pregnancies that have not passed the fifth month from those that have; and
2. Whether they are in regular development, or if their evolution is interrupted.

When diagnosis is made that the extrauterine pregnancy is developing and has not yet reached the fifth month, it is necessary to extirpate the fetal cyst, as the rupture and succeeding hemorrhage, which may be mortal, represent always a grave danger and the hope of having a viable fetus is slight. If the extrauterine pregnancy of less than five months is arrested and does not develop, operation is indicated as the opinion that arrest of development guarantees against rupture of the tube and hemorrhage is erroneous, as has been demonstrated clinically. Laparotomy is the best method. It can be done through the vagina anteriorly or posteriorly, but the vaginal method is not advisable on account of liability to hemorrhage during manipulation. The suprapubic ablation of the tube containing the fetal cyst is done in same way as extirpation of tube for inflammatory causes. Sometimes, however, when the woman is young the tube may be incised, contents evacuated and the tube sewed up and left in place. Often the extrauterine pregnancy is due to the external migration of the ovum. Pestalozza has advised taking away at the same time the corresponding ovary, to avoid the migration of a matured ovum from it and the possibility of an extrauterine fetation in the opposite tube from the one removed. As a certain frequency of repetition of extrauterine pregnancy in the same person has been observed, it has been suggested that a bilateral extirpation of the adnexa be done every time an operation is done for extrauterine pregnancy (Coyteux-Prevost).

Pestalozza and Kynoch, and the writer agrees with them, oppose this and prefer to operate on each side when required. Varrier, who approves bilateral castration, found only 70 cases of repeated pregnancy in 177 cases of extrauterine pregnancy treated surgically. He himself finds the proportion of one extrauterine pregnancy to four normal pregnancies. If it is found necessary to remove the uterus, ovarian tissue should be left, wherever it is healthy. When the extrauterine pregnancy has passed the fifth

month the fetus may be alive or dead; when alive and at or near term, all agree to operate at once. After the fifth month, but still far from term, some operate without taking the fetus into consideration, others advise waiting until it is viable. Considering that the rupture of the fetal cyst, the danger most grave for the mother, takes place less frequently after the fifth month, and that the incapability of extramaternal life of the fetus is somewhat exaggerated, it is seen that the proposal to wait may be received with favor. Statistics show that many such fetuses live a long time, some arrive at adult age. According to Sittner 93 per cent. do not present deformities due to ectopic gestation. An operation in the eighth or ninth month is no more grave than in the sixth or seventh month. The woman should be watched and be in a place where an operation can be performed at once in case of need. To justify a wait, the pregnancy should be physiological and not inflict injury on the general state of the woman. If the extrauterine fetation has passed the fifth month and the fetus is dead, operate. Leaving the affair to nature results in a mortality of 52.6 per cent. from the statistics of Paray. Operate at once, especially if there is pus. Fetus being over five months and living, laparotomy is the best method. The vaginal route gives disastrous results, due to difficulty in stopping hemorrhage. On opening the abdomen when there are no adhesions, and it is possible to take out the cyst entirely, do so quickly, and turn it over to an assistant to revive the fetus; or it may be opened, the fetus taken out, and then the cyst with secundines. If there is an abdominal or tubo-abdominal pregnancy in which the fetal cyst is adherent to neighboring organs, incise the abdominal walls, open fetal cyst, and extract carefully the fetus, catching the umbilical cord with two hemostatic forceps. Then, if possible, separate the adhesions and ablate the sac *in toto*. Sometimes it may be necessary to extirpate also the uterus and the tube and ovary of the opposite side.

Care of the Puerpera During Convalescence.—A. Ernest Gallant (*Amer. Med.*, May 14) finds that to secure satisfactory convalescence the patient must secure proper rest and food; the bowels should act freely. By insisting on the lateral or abdominal posture we encourage the uterus to contract in its normal relation to the bladder. After the first week, by the use of tampons any tendency to uterine displacement may be overcome, or its recurrence prevented, if present before pregnancy; and the good effect may be continued by inserting a pessary, to be worn until assured that the uterus will remain in its proper position.

For the relief of soreness, stiffness, and after-weakness, loss of muscular tone and strength while confined in bed, the prevention of abdominal laxness and subsequent visceral prolapse the patient must receive general massage for the first three days, massage with passive and active motion the fourth, fifth, and sixth days. She should be taught suitable exercises for strengthening the muscles of the abdomen, back and extremities during the succeeding days in bed, and practice them daily after getting up.

The relaxed condition of the abdominal wall demands the constant wearing of a snugly fitting abdominal binder held in position by perineal straps, as long as confined in bed; to be followed when out of bed by a specially fitted corset, put on while in the dorsal position and worn continuously when not lying down.

Anatomy and Pathology of the Placenta.—P. Kworostansky (*Arch. f. Gyn.*, Bd. 70, H. 1) bases his paper upon the examination of 22 gravid uteri from the first to the tenth month, of which 16 contained the placenta also, and 6 pathological placenta. His conclusions are that fetal elements, syncytial giant cells and Langhans' cells occur in the muscle of all gravid uteri from the first to the tenth month, and are found in the puerperal uterus several weeks after labor. Under the influence of cardiac and renal affections, uterine tumors, lack of mucosa, in short, conditions causing poor nutrition of the placenta, the fetal elements from the superficial layer of the mucosa grow exuberantly into the depth of the muscle tissue. Thence they may extend through the circulatory system to the lungs and vessels. They normally cause only a slight swelling of the site upon which they become fixed and no necrosis. The diagnosis of syncytioma malignum can be made positively only when the fetal epithelium grows without limitation or regular form into the muscle tissue, lying not singly between the muscle and spindle cells but in masses of several layers. When the bundle of chorionic villi, which are situated in the great vessels and are grown together intimately with the muscle tissue, unite with the fetal epithelium, there occurs atony of the uterus besides adhesion of the placenta, and it may cause death. Normally no new muscle cells are formed during pregnancy. The old hypertrophy but retain their physiological power of extension and contraction. Under the influence of cardiac disease, nephritis, anemia, eclampsia, or sepsis the muscle tissue hypertrophies more than is usual in the gravid uterus and undergoes hyaline degeneration, fibrillary and molecular changes and vacuolation. All these forms of degeneration lead to loss of power of contraction of the uterine muscle and may end in fatal atony and rupture. The placenta show a greatly increased adaptability in respect to place and nutrition, and compensatory increase of the function of certain parts when that of others is diminished by disease of the mother or child. In infarction of the placenta the sound portion shows great proliferation of the epithelium, marked branching of the villi and stagnation in the vessels. Infarction with coagulation of blood is a constant occurrence in cardiac and renal diseases, eclampsia, and cardiac lesions of the child. Necrosis of the placenta occurs with premature separation of the placenta by formation of a hematoma between uterus and placenta.

GYNECOLOGY AND ABDOMINAL SURGERY.

Relation of Hysteria to the Female Sexual Organs.—The genital organs of woman have long been saddled by many with primary responsibility for nervous disorders occurring in that

sex. G. von Voss (*Monatsschr. f. Geb. u. Gyn.*, Bd. xviii, H. 4) says that hysteria does not spring from diseases of the female genitals more than from those of other organs. Doubtless certain nervous symptoms depend upon changes in the female genitalia and may simulate hysteria, such as neuritis of the pelvic nerves which may extend to the nerves of the lower extremities. Their occurrence is to be explained as due to continuity. One should be very cautious about the assumption of a reflex origin. The majority of cases of neuroses consulting the gynecologist belong not in the class of typical hysteria, but are of a degenerative hysteriform type. Consequently the diagnosis of the nervous origin of subjective disturbances, when local signs are slight or absent, can be made but rarely upon the occurrence of severe sensory disturbances, typical pressure points, etc. For this reason the gynecologist must rely chiefly upon the history and the disproportion of subjective symptoms and local lesions. Hereditary factors, such as an alcoholic family history, point to a nervous origin of symptoms. If serious local changes are apparently absent in virgins, rectal and vaginal examination should be avoided. The importance of even simple gynecological operations should not be underestimated, as even narcosis may produce a powerful impression upon the nervous system of those predisposed. Desire for operations is an artificially created symptom of hysteria. In cases with nervous complaints distraction often yields the best results, and this explains why subjective symptoms resting upon a nervous basis often either grow worse or recur after temporary improvement after even repeated local treatments.

Malignant Myoma of the Uterus.—K. P. Uleska-Stroganowa (*Monatsschr. für Geb. u. Gyn.*, Bd. xviii, H. 3) has examined twelve specimens which she classifies as leiomyoma malignum uteri. The patients were from 38 to 59 years old. Most of them complained of a rapidly growing abdominal tumor which had been present from two to twelve years, and usually caused pains in the lower part of the abdomen and back and persistent bleeding. In some the discharge was serous; in one free fluid in the abdominal cavity was detected before operation. The tumors occur in the superficial layer of the uterus as nodules or project as polypi with broad pedicles into the uterine cavity. Metastases and recurrence were noted in five cases. The infrequency of case reports of this tumor is attributed to its description usually as a sarcoma or myoma. It is distinguished by its great malignity, shown by rapid recurrence and metastasis. It arises from muscle cells which degenerate and come to resemble sarcoma cells. The great variability in form of these cells, the occurrence of polynuclear cells and the presence of numerous mitotic figures are characteristics of the tumor. The growth usually develops from a pre-existing myoma or fibromyoma. Tumors which possess the structure of young muscle tissue must be regarded with suspicion on account of their rapid growth and their tendency to change into malignant myomata.

Myofibroma of the Uterus.—According to Charles W. Oviatt (*Clin. Rev.*, May), a small fibroid that remains stationary in size and gives rise to no symptoms may be safely allowed to remain, but should be kept under observation. Myomectomy should be done, if practicable, in young subjects. After the age of thirty-five, however, the patient has little or nothing to gain by retaining a uterus loaded with the possibilities of future trouble. In deciding whether to operate or not it should always be borne in mind that it is not always possible to make a positive clinical diagnostic distinction between simple fibroid tumors and malignant disease.

Women near the climacteric, suffering from fibroids, should have them removed, as the hemorrhage rarely ceases while the tumor remains, and there is greater danger of malignant changes.

When pregnancy occurs in a fibroid uterus, and the tumor has developed from the upper segment of the uterus, the case should be allowed to go on to term, and most of them are delivered normally. When the growth is low down and of such size as to interfere with normal delivery, let the case go to term and deliver by abdominal section. In small tumors developing from the lower section it may be practical to perform vaginal myomectomy.

In hysterectomies, one or both ovaries, or at least some ovarian tissue, should be allowed to remain. Supravaginal amputation through an abdominal incision with careful covering of the stump with peritoneum is the ideal method for most fibroids. The fact that we must look upon every neoplasm, no matter of what character or where situated, as a potential if not an actual source of danger, and the low mortality of hysterectomy make a strong argument in favor of an early operation.

Primary Sarcoma of the Vagina.—Henry Jellet and H. C. Earl (*Jour. Obst. and Gyn. Br. Emp.*, Mar.) describe a case of primary sarcoma of the vagina occurring in a woman, aged fifty-five. The tumor was an infiltrating sarcoma, the rarer of the two varieties met with in the vagina. The growth was removed easily and the patient has remained well since the operation four months ago. To lessen the hemorrhage at the time of operation several injections of a 1 to 5,000 solution of adrenalin were made into the base of the growth.

Local Anesthesia in Gynecology.—J. Clarence Webster (*Jour. A. M. A.*, Apr. 23) advocates the more general use of local anesthesia, especially in old age, kidney, pulmonary and cardiac disease, marked anemia, chronic wasting diseases and sepsis. He recommends Schleich's method, by which method he has been able to perform plastic operations on the cervix, vagina and vulva, also extirpation of diseased uteri and adnexa. In opening the abdomen he infiltrates the skin, but rarely uses any anesthetic thereafter. All pains felt within the abdomen are to be referred to parts which are innervated by the intercostal, lumbar and sacral nerves.

**THE AMERICAN
JOURNAL OF OBSTETRICS
AND
DISEASES OF WOMEN AND CHILDREN.**

VOL. L.

OCTOBER, 1904.

No. 4.

ORIGINAL COMMUNICATIONS.

**PAPILLARY CYSTS AND PAPILLARY TUMORS OF THE
OVARIES WITH A CONSIDERATION OF THE
PROGNOSIS AND TREATMENT.¹**

BY

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Paris.

CYSTS and papillary tumors of the ovary form but one clinical and anatomico-pathological group. Many of the papillary tumors are more or less large cysts which have burst open; the histological structure of these tumors is the same, and the presence of a limiting cavity in one case, and its absence in the other, is but a temporary and accessory morphological difference. In fact, this difference has no importance as long as the papillary growths are entirely internal; and it completely disappears when, further on, the external surface of the cyst becomes covered with papillary growths.

Two important features belong to these tumors. (1) Ascites, often considerable in connection with external vegetations. (2) Eventually disseminated growths over the parietal and visceral peritoneum, while the omentum may or may not be infiltrated.

A clinically confirmed ascites, and the disseminated peritoneal

¹Read at a joint meeting of the Chicago Medical and Chicago Gynecological Societies, June 23, 1904.

vegetations, noticed during celiotomy, have too often led physicians and surgeons to consider these tumors as malignant in every case; that is to say, as if lymphatic invasion and generalisation were fatal.

I purpose pointing out that this prognosis has often been too severe. To be sure, all these tumors seem malignant to the naked eye, and one can well understand that many operators, after opening the abdomen, have sutured it again, when seeing not only cauliflower growths embedding the uterus on both sides, but also disseminated vegetations all over the pelvic floor, with suspicious thickening of the omentum. In such a case celiotomy must not be reduced to an exploratory incision. These tumors can often be completely removed, and even an incomplete operation may be followed by prolonged if not permanent recovery. I shall try to prove these suggestions by several cases quoted further on.

In order to be brief and clear, I purpose to state several propositions which will be attended by subsequent particulars. So I shall now draw up my conclusions.

Proposition 1.—Papillary tumors of the ovary (cystic or solid) must not always be considered as malignant. Not infrequently some of these tumors never undergo malignant degeneration, and do not relapse after removal, or only after a long time, and then but locally without metastases.

Proposition 2.—It is necessary to make a careful distinction between carcinomatous generalisation (which takes place through lymphatics and blood-vessels) and simple grafts which result from contact or from growth upon the peritoneum of detached papillary vegetations of the ovary. This latter process is benign and can be compared with what happens with papillomas and warts of the skin.

Authors are far from agreeing as to the first proposition. An interesting account of the different opinions suggested on the subject can be found in E. Troscher's work.¹ It would be too long to state them all here. Fourteen years ago I wrote in the first edition of my "Treatise of Gynecology:" "One point that is still quite obscure is the question of benignity or malignity of the ovarian papillomas. It seems that the extreme instability of histological structure of these growths, the ease with which the cells undergo heterotypic changes, place these cysts in a perpetual state of *malignant imminence*." A great number of patients operated upon make a complete and durable recovery.

A number of permanent recoveries obtained in cases which seemed hopeless can be found in the thesis of one of my pupils.² I have been obliged in some of those cases to remove secondary papillary grafts from the parietal peritoneum, from the broad ligaments, from the intestinal ducts and even from up behind the liver, and from the spleen. I³ have also removed, by excision, secondary growths from the omentum and mesentery. Such patients have kept well for years (from five to ten years); one of them who has presented the longest survival is a woman I operated upon for the first time in September, 1878, I removing a large papilloma of both ovaries, with very abundant ascites.⁴ The patient was then twenty-five years old; recovery was complete for 20 years, up to the middle of 1898. Then ascites appeared again, the abdomen enlarged considerably, with edema of both legs, the result of compression. The second operation was performed on December 10, 1899. The recurrent tumor being quite fixed to the pelvic floor, and the patient being in a very bad condition, I did not attempt to remove it, but merely drained. The patient made a rapid but temporary recovery. Ascites disappeared; so did the edema of the legs, and her health was again satisfactory for about one year. She died on May 4, 1901. I am not aware of any other example of relapse after such a long recovery. If this patient had died two years sooner she could have been quoted as an example of permanent cure; in fact, she was so mentioned in the second edition of my "Treatise of Gynecology, 1897."

In my second proposition I insisted on the difference between true metastases, which are undeniable proof of malignancy, and the grafts resulting from simple implantation of papillary vegetations on the peritoneum. Freund⁵ noted long ago this capital distinction, which has since been confirmed by a number of authors.⁶ However this has been too often disregarded, and the presence of disseminated growths has so dismayed many operators as to make them give up finishing their operations. Other operators have removed the principal tumor, and have noticed that even after these incomplete operations, in which vegetations on parietal peritoneum and on the bowels have been left, patients have entirely recovered, and that ascites did not return. Recently during one secondary celiotomy I have been able to ascertain that papillary growths noticed on the intestines in the first operation had vanished. Liebreich, in his inaugural dissertation, 1897, quotes a similar case of Bumm.

Proposition 3.—Some of these tumors undergo a malignant process which, at the beginning is very limited, may afterwards extend all over the mass and at last brings on a real generalisation with cancer metastases. Before this last period and at the outset of the malignant transformation, it is quite impossible to discern it with the naked eye, and microscopical investigations are necessary. Such is the origin of the uncertainty of prognosis in every operation of this kind before pathological examination. Even then, this examination can lead to misinterpretation, if it has not been carried all over the tumor; for the malignant process may be very limited in extent.

There are some cases in which there is no doubt about malignant degeneration, even on macroscopical examination. The presence of hard lardaceous masses, the excessive adhesions, and the large diameter of blood-vessels give to these tumors a special appearance. In those cases, extirpation seems so dangerous that the operator can hazard only an exploratory celiotomy. If the tumor is removed, a rapid recurrence takes place and in this instance microscopic examination proves the tumor to be undergoing malignant degeneration.

But closely related to these extreme cases are others in which nothing will give notice to the operator that the tumor is already becoming malignant. It seems to be an ordinary papillary tumor, but by histological examination of several parts of the tumor, a place is found which is really malignant. Such a verification belongs to the pathologist only. It is of little interest to the operator because too late. It allows him only to make a guarded prognosis.

It is almost certain that in all cases where papillary tumors have rapidly relapsed with carcinomatous generalisation there was already some malignant change, but so limited in extent that it escaped recognition. Cullen⁷ has proved that sarcomatous nodules may exist in a very small portion of the wall of one of the numerous cavities of a multilocular cyst. My careful pathologist, Mr. Bender, has been able to discover in my laboratory very small cancerous masses scattered in apparent benign papillomata.

The practical deductions for the surgeon from the preceding considerations are:

Proposition 4.—In absence of positive symptoms of malignancy (cancerous cachexia, or visceral metastases) operators must always behave towards these tumors as if they were benign, and proceed to remove the largest extent possible of the neo-

plasm. The disseminated growths or even small parts of the papillary tumor detached and lost in the peritoneal cavity may disappear. In other cases they will be the origin of local recurrence; but these relapses can be treated successfully by later operations.

I have already spoken of the absorption noticed in the course of a secondary laparotomy, and of the papillary growths spread over the peritoneum around a large cauliflower tumor of the ovaries. This observation must prevent the surgeon from considering the appearance of these implanted surrounding growths as the sign of generalization and must lead him to boldly remove the principal mass with the justified hope that the secondary vegetations will be absorbed. In several of those cases which came under my observation I have proceeded in this manner, and I have seen my patients recover without any recurrent ascites, which is a valuable reason for thinking that the peritoneal growths had disappeared. I might point out several cases of this kind; I will relate only the most striking. It will show how useful it is to express resolutely the conclusions I uphold, since they are still disregarded by men of greatest worth.

Last November, a French lady who had lived in the United States for years, came back to consult me. She was introduced to me by one of the most noted gynecologists of Chicago, who wrote me this letter, dated October 17, 1903:

"Mrs. H. first consulted me in Chicago last spring, having had an attack of what appeared to be rather transient pelvic inflammation. I found a slight thickening of the structures to the left of the uterus, but inasmuch as the tenderness had entirely disappeared, and because there were then no subjective symptoms, I advised no treatment. About four weeks ago I saw her in consultation with her physician, and found a large, fixed, irregular, non-fluctuating mass to the left of and posterior to the uterus. There was no tenderness on pressure and no evidence of an inflammatory process. Her physician suggested that the growth might be a rapidly developing papilloma. On opening the abdomen this was found to be the case, papillomatous disease having developed until it completely blocked up the pelvis minor, especially on the left and posterior to the uterus; the surrounding peritoneum was also studded over at points with the same disease. We did not think it wise to pursue the operation to the removal of the growth because we felt quite sure that no permanent satisfactory result could be obtained. We therefore closed the

wound without drainage. Mrs. H. made an uneventful recovery from this incision. Mrs. H. will hand you some microscopic sections from the growth which you will find confirm our diagnosis of papilloma. I regret that this case gives so little promise of recovery. At the time of exploratory incision there was considerable ascites."

This first operation was performed (in the United States) on the 7th of September, 1903.

When the patient came to me she was in fairly good condition, with no pain but with considerable ascites, which impeded walking. Nothing malignant was found in the microscopical sections handed to me. Their appearances were those of the ordinary papilloma, so I decided to perform another operation. This took place on November 13th, 1903. I made a rather long incision. It is most important in such cases to be able to see well and to have sufficient space in order to work easily. A great quantity of yellow-colored ascitic fluid was evacuated. The pelvic cavity was blocked up by a cauliflower mass imbedding the uterus. No scattered vegetations were found on the peritoneum, either parietal or visceral, although these growths were expressly mentioned by the surgeon who performed the first operation. We must then admit that the effect of the first operation has been the absorption of these growths. With my hand deeply engaged in the pouch of Douglas I lifted the papilloma out of the abdomen. Two forceps were fixed on both broad ligaments, which were incised. The cervix was also excised after liberation of the bladder, in order to do a subtotal hysterectomy. The cervix was sutured, and a quantity of fungous material which had been left in the pouch of Douglas and several disseminated small parts were removed. I made drainage with Mikulicz gauze and tube. The tumor was larger than two fists and was formed by two masses which had destroyed both ovaries and two-thirds of the tubes; these were reduced to two thickened stumps, as if they had been amputated. The uterus was entirely covered by the bilateral spreading of the vegetations, but it was not degenerated. The patient made an uninterrupted recovery, and in April, 1904, was in wonderful condition.

I have attached great importance to this case because it is typical. Of course it is still too recent to draw up a prognosis, but recovery remains complete six months afterwards; the patient, who had become a real invalid, has returned to her way of living, greatly improved.

Experience has proved that such a recovery may be lasting. It also shows us that two other courses of the illness are possible: (1) local recurrence without malignancy; (2) recurrence with malignant degeneration (epithelioma or sarcoma).

What must one do in case of recurrent tumor? One must not give up, but perform another celiotomy, and again remove the new growths. In one case I performed successively three laparotomies, taking away the first time a mass of vegetations from the thickened omentum and a little cyst grafted on the mesentery; the second time, a mass of free papillary growths contained in a circumscribed cavity of the peritoneum situated between the liver, the spleen and the diaphragm. A third laparotomy was necessary for recurrent ascites; in the course of this operation I noticed that the peritoneum had become again smooth and bright, and that there was but a single papillary growth not larger than a pea. The patient made a lasting recovery. These successive laparotomies produce three results: They allow one to remove the relapsed growths scattered over disseminated vegetations, or over ancient adhesions; they also allow the removal of vegetations which may have been detached and lost in the peritoneal cavity during the first operation while employing Trendelenburg's position. This was the source of the vegetations found by me in a circumscribed cyst underneath the diaphragm in the case just described. Finally, and especially, celiotomy seems to have a real modifying influence on the peritoneum, and is followed by the disappearance of the disseminated papillary growths and of the ascites as it causes that of nodules and ascites in tubercular peritonitis.

Of course recovery after these repeated celiotomies is sometimes of rather short duration, and the tumor returns as a malignant one. I will mention as an example a patient who has been observed by me for ten years. This is the summary of her history. The first part was published in the inaugural dissertation of my pupil Cazenave in 1895.

In October, 1888, Mrs. M. V. de C., aged 30, was admitted to the Hospital de "La Pitié" in the service of Dr. Pollailon. This surgeon performed a laparotomy and removed a papilloma of the right ovary. The abdominal wound which had been drained became fistulous, and allowed continuous oozing of ascitic liquid with small remains of vegetations. This quite abundant flowing kept on without weakening the patient, who went back to her ordinary business. Four years later (1892) a papillary tumor ap-

peared at the opening of the peritonea-cutaneous fistula and increased by degrees. The patient came to me two years later. The papillary tumor was as large as an orange, and extended down to a large intra-abdominal mass. The quantity of ascitic liquid spontaneously evacuated in 24 hours was about one litre. General condition good. Celiotomy on June 4, 1894; a large papilloma was removed, it was developed from the adnexa of the left side; apparently complete recovery lasted for six years, until 1900, twelve years after the first operation. In 1900 solid tumors began to appear in the abdomen, which became adherent to the skin of the ilio-inguinal region. These tumors seemed to be developed from the lymph nodes. The following year (1902), the compression of the iliac vein produced an elephantiasic edema of the leg. In spite of this, the general health remained good; no pain. In 1903 the patient began to suffer, edema increased, extended to both legs and extended upward to the breast. The abdomen was filled with solid masses, universally adherent; in some places the skin was thin and of a violaceous color. There is now no doubt of malignant degeneration, but this happened 14 years after the first operation. I do not think this is a discouraging result.

Proposition 5.—Frequency of successive invasion of both ovaries by papillary tumors constitutes indication for removal of the adnexa of both sides, even if those of one side are still healthy, at least in women who are approaching the menopause. In young women it would be preferable to venture a new laparotomy.

I will once more mention the case in which Dr. Polaillon removed a papilloma of the ovary four years before I was obliged to remove the left adnexa. Troschel noticed a proliferating glandular cyst which had developed within a year after removal of a papillary tumor of the right side.

Conservative operations must be performed in young women, unless the tumor removed seems indubitably cancerous, in which event it is best to make a complete removal, even taking away the uterus.

Proposition 6.—With bilateral papillary tumors operative technic will be greatly simplified by performing subtotal or total hysterectomy, according to the case.

Hysterectomy should be total if malignant degeneration is feared. If the bilateral papilloma is benign, subtotal hysterectomy is preferable, since it is more rapid and less serious. Hys-

terectomy, in bilateral tumors, simplifies to a considerable extent the technic and makes the control of bleeding much easier.

Proposition 7.—Drainage is not necessary when cysts do not present outside vegetations, and when there is no ascites. Every time ascites is present, it is right to drain the peritoneal cavity for some time. Incomplete removal or even an exploratory incision in inoperable cases is often accompanied by a real diminution of ascites, with local and general improvement.

Whenever the peritoneum contains liquid, I think it useful to drain the abdomen for three or four days with gauze, and the following days with a tube. In some special cases a Mikulicz dressing may be necessary, but I never leave it longer than four days.

Well known cases of incomplete removal of papillary tumors have made long apparent recoveries. This does not mean that one should systematically perform incomplete operations unless this is obligatory, either through mistake or as a last resource. Exploratory celiotomy, especially if followed with temporary drainage, has a good effect even in malignant cases and inoperable neoplasms. Now and then ascites disappear for a long while, and the progress of the disease seems to be arrested.⁸ This has been observed by other surgeons.

I consider that a little incision followed by drainage for forty-eight hours is preferable to a simple tapping in every kind of ascites. The operation is less blind and the improvement obtained is more durable.

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INTRAPELVIC HEMATOMA FOLLOWING LABOR NOT ASSOCIATED WITH LESIONS OF THE UTERUS.¹

BY

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By the term puerperal hematoma one understands the effusion of a greater or lesser quantity of blood into the connective tissue spaces of some portion of the genital tract, or into the structures immediately adjacent to it, in contradistinction to hematocele formation, in which the blood is poured out into the peritoneal cavity and then becomes encapsulated. Hematomata are classified as vulval, perineal, vaginal and subperitoneal or broad ligament, according to their point of origin.

The vulval and perineal variety has long been familiar to medical men, although the first authentic description was given by Rueff in 1554. From that time until the early part of the 18th century only occasional reference was made to the subject, Kronauer, in 1734, being the first to devote special attention to it. With the exception of reports of isolated cases, no further contribution was forthcoming until 1797, when the summary of Casaubon appeared. This was soon followed by the dissertations of Audibert, Siebenhaar and the reports of Joerg, Chaussier. Dewees and others, but it was not until the appearance of Deneux's admirable monograph, in 1843, that general attention was directed toward the condition.

Vulval hematomata or thrombi usually make their appearance shortly after labor, though occasionally they occur before the birth of the child, and still more rarely in the latter months of pregnancy; they are occasionally encountered in non-pregnant women whose external genitalia have been subjected to some kind of traumatism. The condition is usually limited to one labium majus, though in extreme cases the effusion of blood may extend into the perineum and buttocks, and in very rare instances, as in the case of Besel-Hagen, over the lower portion of the anterior abdominal wall. Such hematomata vary markedly in size, but are not of serious prognostic import unless they attain

¹Read before the American Gynecological Society, May, 1904.

immense proportions, when their rupture may give rise to fatal hemorrhage.

The first of a number of occurrences of this kind was recorded by Casaubon, in whose case the hematoma followed a kick in the last month of pregnancy, and rupturing, gave rise to fatal hemorrhage, the child being saved by a post-mortem Cesarean section. In not a few cases, particularly in pre-antiseptic times, even though fatal hemorrhage did not occur, the rupture opened a portal of entry for an infection, which frequently led to death. Occasionally, when the condition occurs during the course of labor, the swollen labia may so occlude the genital canal as to render the delivery of the child impossible until the contents of the hematomata have been evacuated; while when the condition develops post-partum, the obstruction may be so marked as to cause the retention of the lochial discharge.

Vaginal hematomata, in which the collection of blood occurs in the connective tissue surrounding the vaginal wall, but beneath the pelvic fascia, were not recognized until a later period, the case of Peu, in which the condition was mistaken for an inverted uterus, being one of the first reported. Such structures may attain considerable size, and when occurring during labor may obstruct delivery, and during the puerperium cause a damming back of the lochia. They occur less frequently than the vulval variety.

Subperitoneal hematomata, in which the collection of blood lies beneath the peritoneum, but above the pelvic floor, are still less frequent and are usually due to incomplete rupture of the uterus, or deep cervical tears; though in a small number of cases, such an association is lacking, and the hemorrhage results from the rupture of vessels within the broad ligament in the neighborhood of the supra-vaginal portion of the cervix or about the base of the bladder. As far as I have been able to ascertain, the first case of this character was reported by Baudelocque. In not a few instances a similar condition may follow the rupture of a pregnant tube between the folds of the broad ligament; while in non-pregnant women subperitoneal hematomata may follow injuries to blood-vessels or the surrounding viscera in curetting the uterus, removing tumors, and occasionally after very violent coitus.

In this paper I desire to leave out of consideration all forms of hematomata except those following labor, in which there was

no injury to the uterus, and in which the collection of blood is bounded above by the peritoneum, and below by the pelvic floor.

The first case of this character was observed by Baudelocque, and was described in Casaubon's paper of 1797. Since then a small number of similar cases have been recorded, although they do not appear to have been clearly differentiated from vulval and vaginal hematomata until the appearance of Deneux's monograph, in 1834, in which attention was first directed to the part played by the pelvic fascia, which was abundantly confirmed and elaborated by the later work of Laborie, Perret and Schlesinger.

The object of this paper is to describe a case of subperitoneal hematoma which I saw last November, after which certain points in the literature upon the subject will be considered.

I was asked to see the patient at 10 P.M., November 2, 1903, by Doctors H. L. Smith and O. P. Penning, who believed that they had to do with a concealed hemorrhage. The patient, a 28-year-old primipara, had passed through an uneventful pregnancy, and had been delivered by another physician of a small child after an easy low forceps operation, which was performed without anesthesia. The placental period was uneventful, although almost immediately after its conclusion the patient began to complain of intense tearing pain in the neighborhood of the rectum. As an external examination revealed nothing abnormal, her physician attributed the suffering to after-pains, for which he administered a hypodermic injection of morphia. This somewhat relieved the patient, whom he left in good condition an hour and a half after the birth of the child.

Shortly afterward the pain became much more severe and extended into the lower abdomen, the patient at the same time becoming weaker and pallid in appearance. As the physician who had delivered her could not be reached, Drs. Smith and Penning were summoned. They found the patient very blanched and gasping for breath. As the uterus was firmly contracted and there were no signs of external hemorrhage, they considered the possibility of internal bleeding, and at once administered 500 c.c. of sterile salt solution subcutaneously and gave the usual stimulants by the mouth.

When I saw the patient she was perfectly conscious and complained of intense pain about the rectum. She presented all the signs of acute anemia, the pulse being 144, thready and weak. There was no discharge of blood from the vagina and only a slight perineal tear. On palpating the abdomen, the firmly con-

tracted fundus of the uterus was felt at the level of the umbilicus and beneath it, filling out the entire lower abdomen was a firm, rounded, slightly fluctuant tumor, somewhat sensitive on pressure, extending from within three fingers' breadth below the umbilicus to the symphysis pubis. At first glance it appeared to be the tensely distended bladder, but upon catheterization only a few c.c. of bloody urine escaped.

On vaginal examination, the external os was found to be just above the level of the promontory of the sacrum, and apparently was not torn. The entire left and posterior portion of the pelvic cavity was filled out by a firm tumor, which extended from the cervix to the pelvic wall and displaced the lateral and posterior fornices downward. On percussing the lower part of the abdomen, a distinct wave of fluctuation was transmitted to the vaginal fingers.

As there was no tear of the cervix or vaginal fornix, I made a provisional diagnosis of an incomplete rupture of the uterus, with hemorrhage between the folds of the broad ligament. In view of the patient's condition, which was steadily growing worse, it seemed that the best chance of saving her life would be offered by an abdominal section, when the hematoma could be emptied and the uterus sutured or removed as seemed best at the time.

The necessary instruments and appliances were accordingly sent for and preparations rapidly made for the operation. This naturally caused some delay, and by the time the patient was placed upon the table in Trendelenburg's position, her condition had become so much worse that the pulse could not be counted at the wrist. Accordingly, an intravenous injection of sterile salt solution was commenced as soon as the anesthesia was started.

An abdominal incision was made from the symphysis to the umbilicus. After cutting through the fascia in the linea alba, a dark blood-stained tissue came into view, which broke down readily under the fingers, but did not come in contact with the peritoneum, except for a distance of 5 cm., just beneath the umbilicus. Accordingly, the peritoneal cavity was opened in this location and the abdominal incision extended a few centimeters above the umbilicus. After packing back the intestines with compresses, the uterus was seized and drawn up into the wound, where inspection showed that it was perfectly intact, as were likewise the tubes and ovaries, the corpus luteum being on the right side. Lying in front of the uterus was the contracted bladder, whose peritoneal covering presented an ecchymotic appearance. On careful examination

with the hand in the abdominal cavity, it was found that the tumor lay beneath the peritoneum and in front of and below the uterus and bladder.

To avoid contamination, the peritoneal incision was immediately closed with a continuous suture, after which the loose blood-stained tissue beneath it in the mid-line was bluntly dissected with the fingers, which suddenly entered a large cavity filled with fluid and clotted blood. The contents were removed as rapidly as possible, which I found that I had to deal with a cavity which measured 10 cm. in its transverse and 15 cm. in its vertical diameter, and extended from three fingers below the umbilicus to the pelvic floor. Anteriorly it was bounded by the symphysis pubis and the anterior abdominal wall and posteriorly by the anterior and inferior surface of the displaced bladder and the posterior fold of the left broad ligament. Inferiorly it extended to the pelvic floor, where the fingers came in contact not only with the lower margin of the symphysis pubis, but with the ischio-pubic ramus; while laterally it had spread apart the folds of the left broad ligament, and pushed the cervix to the right. To make sure that the lower uterine segment was not ruptured, the hand of an assistant was passed into the uterus and could be distinctly felt through its flaccid lower portion, which, however, presented no sign of a tear.

After carefully sponging out the cavity, it was found that its walls presented a jagged blood-stained appearance and that the hemorrhage came from an oozing surface upon the inferior and anterior portion of the bladder in which no large bleeding vessels could be seen. As it appeared impossible to arrest the hemorrhage by the application of sutures, the cavity was tightly packed with iodoform gauze, which was brought out at a lower end of the incision, and a firm pack introduced into the vagina to make counter pressure. The abdominal wound was then closed by through-and-through silver wire sutures, its lower portion being left open for drainage. After the usual dressing, a tight abdominal binding was applied and the patient put back to bed with a pulse of 140 and in a better condition than before the operation.

The recovery was gradual but uninterrupted. For the first few days there was considerable oozing from the wound, and when the packing was removed, four days after the operation, a sound introduced through the external wound penetrated 15 cm. before reaching the floor of the cavity. The wound closed rapidly, so that at each subsequent dressing a smaller quantity of gauze was

employed, and soon all that was left was a small sinus which closed more gradually, the patient being dismissed perfectly cured two months after labor.

Since operating upon my patient I have looked over the literature upon the subject as thoroughly as possible, and find that this is the only case of the kind which has been treated by laparotomy. Possibly she might have recovered had she been treated in a purely expectant manner, but as she was rapidly becoming worse before operation, and as the probable diagnosis was hemorrhage into the broad ligament following an incomplete rupture of the uterus, I believe that the treatment pursued was fully justified and feel convinced, as far as is possible under the circumstances, that to it the patient owes her life. Whether a vaginal incision and tightly packing the cavity would have brought about the same result I am, naturally, unable to state, but in view of my experience with incomplete rupture of the uterus it would appear very questionable.

After a careful search through the literature, I have been able to collect 33 cases of subperitoneal hematoma following labor and not associated with rupture of the uterus. (See accompanying table.) The first case was reported by Baudelocque in 1778, and the last by Gustav Braun in 1902, the vast majority of the others having been recorded by French and German writers. As far as I can learn none have been reported in this country, and only two in Great Britain, namely, those of Glenn and Purefoy, Lloyd and Carton.

Of course, the cases of record, in all probability, represent only a small fraction of the total number observed, and it is likely that not a few cases which have been described as vaginal hematomata may belong to the same category. Moreover, it is quite possible that a certain proportion of the deaths occurring shortly after labor, and attributed to syncope may have been due to the same cause.

It is interesting to note the large amount of blood which is poured out in some of these cases, 18 of which came to autopsy. In many the hematoma attained immense proportions, the peritoneum being dissected up to such an extent that the blood came to lie in the iliac fossæ, and frequently extended up along the psoas muscle to the region of the kidneys and occasionally to the roots of the diaphragm. In not a few cases the mesentery of the large intestine was dissected up, thus adding to the extent of the hematoma.

On studying the clinical history of these cases a number of interesting and suggestive points were noted. In the first place one is impressed with the surprising frequency with which primiparous women are affected. On analyzing the cases recorded in the literature it is found that in four no statement was made as to the number of children which the patient had had, but that 20 per cent. of the remaining cases occurred in primiparæ.

Moreover, it is a matter of surprise, and in marked contrast to the course of labor preceding the formation of hematomata due to incomplete rupture of the uterus, that in the vast majority of cases the delivery was easy and spontaneous. Thus, in the 33 cases the course of labor was given as follows: Spontaneous 24; version, 4; forceps, 2; no data, 2; not delivered, 1; so that out of the 30 cases in which data were available, 24 were spontaneous—80 per cent.

It is also interesting to note that the children were somewhat smaller than usual, and, with the exception of the case of Ter-Gregorianitz, in which it was stated that the child was large, the heaviest child did not exceed 8 pounds in weight, while the majority weighed less than 7 pounds.

The mortality was extremely high, as of the 32 cases concerning whose termination data were available, 18 ended fatally, a mortality of 56 per cent. As there was only a single death in the 11 cases which occurred after the introduction of modern surgical methods (1880), it would appear reasonable to infer that a considerable proportion of the previous mortality was due to puerperal infection. Moreover, the probability of infection was markedly increased whenever the hematoma communicated with the vaginal canal, no matter whether the result of spontaneous rupture or incision. This is clearly shown by an analysis of the cases. Thus, of the 22 cases occurring prior to 1880, 9 ruptured spontaneously into the vagina and 6 were incised; 6 of the former and 5 of the latter dying, a mortality of 73 per cent.; while in the 11 cases which occurred subsequently to that period, there were two spontaneous ruptures and 4 incisions, all of which recovered.

In not a few cases, however, the actual cause of death was acute anemia, as in the cases of Chaussier, Cazeaux, Hugenberger and others, in which death resulted from anemia consequent upon the escape of blood into the closed hematoma sac; while in one of Hugenberger's cases and another reported by Leopold, the sac ruptured secondarily into the peritoneal cavity, with rapidly fatal hemorrhage.

Etiology.—The earlier writers upon the subject were inclined to attribute the hemorrhage to the rupture of varicose veins in the broad ligaments. The evidence in favor of such an occurrence, however, is extremely questionable, and with the exception of Budin, finds no supporters among modern writers. Accordingly, if it occurs at all, it must play but an insignificant part.

In two of Chaussier's cases the origin of the hemorrhage was extremely interesting; in one the condition occurred in a woman five months' pregnant, during a very jolting ride in a wagon over a rough road; while in the other the hematoma resulted from the rupture of the right psoas muscle in a woman who was extremely unruly throughout labor and who could not be prevented from throwing herself continuously about the bed with great violence. In Schostak's case, which I have not included in the table, the condition apparently followed a violent coitus eight days before the onset of labor, the hematoma forming a serious obstacle to the descent of the child. In the case of Purefoy, Lloyd and Carton the condition followed a spontaneous abortion at the fifth month in a woman who had previously submitted to an ovariectomy, at which time the vessels of the broad ligament were noted to be extremely varicose and after which a second laparotomy was necessary to check hemorrhage from a loosened vessel. It is interesting to note that a hematoma followed each pregnancy which the patient had after the operation four years previously, but unfortunately, in their short account of the case, the authors have failed to give any particulars.

At first glance it would seem natural to suppose that the condition usually results from violence at the time of labor. Careful study of the reported cases, however, would apparently indicate that this is not the case, since 80 per cent. of the labors were spontaneous, and in only one was the child of excessive size; while in only four cases was the extraction of the child attended by any particular difficulty, namely, the cases of Baudelocque, Hugenberger, Leopold and Braun, in all of which difficult version and extraction were necessary, which was complicated by the presence of a contracted pelvis in all but Braun's case.

For a long time there was considerable discussion as to whether the hemorrhage giving rise to the hematoma was of venous or arterial origin, and it is to Perret that we are indebted for precise information upon this point. At the autopsy upon one of his cases, he showed by injection experiments that the hemorrhage was capillary in character, as the fluids slowly oozed from various

points of the wall of the hematoma, no matter whether the injection was made into veins or arteries. Likewise, in my own case, it was clearly seen that no large vessels were involved but that the hemorrhage was merely a capillary ooze from the posterior wall of the sac.

In view of his observations, Perret concluded that the accident did not result from the injury of large vessels, but rather was due to the tearing through of smaller ones by the tissues of the birth canal being slowly dragged off from their attachments by the friction exerted by the oncoming presenting part.

Such a mechanism would afford a satisfactory explanation for the greater frequency of the accident in primiparous women, in whom the rigidity of the tissues and smallness of the parts would render such an occurrence far more likely than in the relaxed genital canal of a multipara. Croom has advanced a somewhat similar explanation for the production of vaginal hematoma. In four cases of this character which he observed, dystocia resulted from a markedly pendulous abdomen, and labor did not progress until the anteflexed uterus had been replaced and maintained in position by a bandage. He held that in his cases undue traction was exerted by the displaced cervix upon the posterior vaginal wall, which then became gradually separated from its attachments. The hemorrhage, however, did not usually occur until the pressure exerted by the presenting part was done away with. It would, therefore, seem that the accident, while rare, is occasionally unavoidable and is due to conditions inherent to the mechanism of labor rather than to violence exerted by the physician.

Diagnosis.—The first symptom which should direct one's attention to the possibility of such an accident is the occurrence shortly after labor of severe, tearing pain about the rectum and lower abdomen, in the absence of any visible lesion. Accordingly, in a primiparous woman such pains should not be attributed to after-pains until the possibility of hematoma formation has been eliminated by a careful examination. Following the pain, the patient may pass into a condition of collapse, which naturally becomes more severe the greater the amount of hemorrhage.

Another important diagnostic point is the elevated position of the fundus, which lies above the umbilicus instead of about midway between it and the symphysis, which is due to the uterus being pressed upward by the tumor mass.

Vaginal examination, as a rule, will enable one to determine whether the hemorrhage lies within the broad ligament, or at

least is superitoneal; for if made shortly after the occurrence of the accident, a tumor will be found depressing one or both vaginal fornices and Douglas's cul-de-sac and extending directly outward from the cervix toward the pelvic wall. Of course, under such circumstances it is impossible to distinguish the condition from a hematoma following an incomplete rupture of the uterus, though the fact that the labor was spontaneous and easy should naturally cause one to suspect that it was not associated with a rupture; whereas, if the labor was difficult, and particularly if severe operative procedures were undertaken, such a distinction could not be made until operation or autopsy.

Treatment.—In the vast majority of cases the treatment should be purely expectant and the attempt made to tide the patient over the emergency by the subcutaneous use of intravenous salt solution and the administration of the ordinary stimulants. If, however, the tumor increases rapidly in size and the collapse becomes more pronounced, I believe that the best means of coping with the hemorrhage is by laparotomy, when the condition can be thoroughly inspected and appropriate means adopted for checking the flow of blood. It seems to me that such a mode of treatment is greatly superior to attacking the hemorrhage from below, as under such circumstances, all that one can do is to pack the wound in the dark and then be haunted with the fear of not having successfully checked the bleeding and the possibility of a secondary rupture into the peritoneal cavity.

On the other hand, if the patient is not seen until sometime after the occurrence of the accident, when the acute symptoms have subsided, or the clinical picture points toward the occurrence of suppurative changes, attack by the vaginal route would appear preferable; as under such circumstances the danger of fresh hemorrhage is minimal, while the possibility of contaminating the peritoneal cavity is done away with.

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Date	Author	Age	Para.	Pelvis.	Presentation.	Course of Labor.	Weight Child.	Location of Hematoma.	Outcome.	Operation.	Autopsy.	Notes.
1778	Baudeoque (Casaubon)	36	I	Rachitic 2½ inches	Head	Difficult version		Right side	Death	None	Yes	Ruptured into vagina. No tear of uterus
1806	Joerg			L. O. I. P.		Spontaneous		Left side	Recovery	None	No	Extended below into L. labium majus
1809	Chaussier	I	I	Head		Spontaneous		Right iliac fossa	Death	None	Yes	Due to rupture of R. psoas muscle
1824	Chaussier	30	I	?		Not delivered, 5 mos. pregnant		Right side	Death	None	Yes	Extended up to R. kidney due to rough ride
1824	Chaussier	I	I	Head		Spontaneous		Right side	Death	Labial tumour opened	Yes	Extended from labium majus to kidney
1825	Lachapelle			Head		Spontaneous		Right side of the vagina	Recovery	None	No	Ruptured during examination
1828	Ulsamer	20	I	Head		Spontaneous		Began in perineum	Recovery	None	No	Spontaneous rupture, externally
1834	Deneux	28	I	Head		Spontaneous	7 pounds	Right side	Death	None	Yes	Spontaneous rupture into vagina
1834	Boer	28	I	Head		Spontaneous	Usual size	Right side	Recovery	None	No	Rupture in vagina. Hematoma extended up to ant.-superior iliac spine
1843	Lubanski	26	I	Head		Spontaneous	Usual size	Right side	Death	Vaginal incision	Yes	Filled, entire pelvic cavity. Spread apart Mesentery of large intestine
1846	Cazeaux			Head		Spontaneous		Right side	Death	None	Yes	Extended up to lower part of diaphragm
1853	Depaul (Plot)	18	II	Head		Spontaneous	2750 grms.	Left side	Death	Incision	Yes	Extended into iliac fossa and up to diaphragm
1855	Chiari, Braun and Spaeth	26	I	Head		Spontaneous		Right side	Death	None. Spontaneous rupture in vagina	Yes	Filled pelvic cavity and extended up along psoas muscle as far as kidney
1860	Laborie	26	I	R. O. I. A.		Spontaneous		Right side	Death	Vaginal incision	Yes	Extended up to R. kidney
1863	Breslau	33	VII	Head		Spontaneous		Recto-vaginal septum	Recovery	Vaginal incision	No	Operation 56 days after labor, 500 c.c. blood
1864	Portet	20	I	L. O. I. A.		Spontaneous	3250 grms.	Left and posterior	Death	Vaginal incision	Yes	Extended up to renal region

1864 Perret	22	I	Breech	Spontaneous	.3800 grms.	Left side	Death	None	Spontaneous rupture	Yes	Extended up to left kidney
1864 Perret	I	I	Head	Spontaneous		Right and posterior	Death	None	Spontaneous rupture	Yes	Extended up above sub-atrial inflexion
1864 Perret	23	I	Head	Spontaneous	3200		Death	None	Spontaneous rupture	Yes	Sub-atrial inflexion to lower part of abdomen
1865 Helfer	35	III	Head	Spontaneous	8 pounds	Left side	Death	None	Spontaneous rupture	Yes	Limited to pelvic cavity
1865 Hugenberger	28	III	Head	Difficult forceps		Right side	Death	None	Spontaneous rupture	Yes	No tear of uterus or vagina. Hematoma extended up to renal region
1865 Hugenberger	36	IV	Transverse	Difficult version		Right side	Death	None		Yes	Secondary rupture into peritoneal cavity. No lesion of uterus or vagina
1884 Schlesinger	24	I	Head	Slow, but spontaneous		Filled pelvis	Recovery	None	Spontaneous rupture	No	Filled pelvis—suppurated
1891 Zer-Gregori- anty	III	III	Head	Slow, spontaneous	Large	Right side	Recovery	None	Spontaneous rupture	No	
1893 Winckel	All Young	No details,	merely says it was like cases of Cazeaux and Hugenberger.	All spontaneous	2000	Filled pelvis and extended up to lower border of ribs	Recovered	None	All incised from vagina and packed	None	Excluded rupture of uterus or vagina. Expectant treatment 5 hours later size of fetal head
1894 Stadfeldt					3180						
1894 Stadfeldt					3580						
1894 Stadfeldt					3560						
1897 Glenn					Forceps						
1901 Purefoy, Lloyd and Carton	Mul- tipara	III	Head	Five months abortion	Difficult version	Right side	Death	None	Tampon of vagina	Yes	Left-sided ovarian cyst removed 4 years previously. Reopened for hemorrhage. Since then hematoma with each pregnancy rupture into peritoneal cavity. No injury to uterus or vagina
1901 Leopold											
1902 Braun											
	26	III	Transverse	Decapitation		Left side extended up to margin of ribs	Recovery	None	None	No	In most serious condition for 16 days

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THE HEMATOM-MOLE: ITS CLINICAL AND PATHOLOGICAL
CHARACTERISTICS AND RELATION TO EARLY
HYDRAMNIOS.¹

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(With four illustrations.)

It is an observation that has been repeatedly made in the history of medicine that a pathological process that was considered exceedingly rare when first discovered has later proved to be of comparatively frequent occurrence. In the field of gynecology and obstetrics this has been particularly true in regard to tubal pregnancy and chorio-epithelioma. If I take up, therefore, the question of hematoma-moles, a condition of which I have been unable to find any accurate description in the American literature, it is with the firm belief that the condition is not really so rare as such a statement would lead one to suppose, but that many cases of this kind have undoubtedly occurred but have either been overlooked or insufficiently described.² For the most part they have doubtless been classed as blood-moles or retained placenta, overlooking the salient factors that make of this kind of pathological ovum a typical class.

In the 17th and 18th centuries molar pregnancy was recognized by many European writers but no even approximately accurate description of the hematoma-mole appeared until the monograph of Pernice³ in 1852. [I was fortunate enough to obtain a copy of his original article and the excellent illustrations may be of some interest to you.] Pernice, however, gave merely a gross pathological description. It remained for Breus,⁴ in 1892, to combine with it an accurate clinical picture and a closer investigation into the minute anatomy. Breus' monograph was based upon the study of five cases and his conclusion is that the "tuberous chorial hematoma of the decidua," as he termed it, is a typical product of gestation. For five years the subject was neglected. Then Neumann, in a paper before the Vienna Gynecological Society, May 20, 1904.

¹Inaugural thesis read before the Chicago Gynecological Society, May 20, 1904.

²Under this category come the articles of Rosenthal⁴⁸ and Parvin.⁴⁷

cological Society, vigorously attacked Breus' views, leading to a discussion which finally evoked personalities on both sides and threatened the disruption of the society. Neumann³⁴ claimed that Breus' moles were but a form of blood-mole. He cited ten cases in which he found tuberous hematomata in placenta of various development. Although certain points in Neumann's argument were well taken, there can be no doubt that his cases did not meet the requirements that Breus set for his form of moles. They were in fact merely placenta in which hemorrhages had caused more or less protrusion of the membranes. The arrow, therefore, missed its mark. It served, however, to awaken general interest in the subject, and after this time reports of cases occur with greater frequency. In some way, however, the apple of discord seemed still to accompany the discussion of this subject, for when Gottschalk¹⁶ reported his case in Berlin, after a heated discussion in which various personalities were indulged in, a proposal was made to have a committee examine his specimen to see if what he reported was really true. Since then, while the theories as to its manner of origin are still widely divergent, there has been a general acceptance of its position as a unique form of molar pregnancy. The views of Berry Hart,¹⁹ Davidsohn⁷ and others I shall have occasion to consider later in the theoretical portion of this paper.

I was fortunate enough while interne at Professor Wertheim's hospital in Vienna in 1901-2, to obtain permission to make use of his extensive pathological material for a further study of this subject. Professor Wertheim's interest in this question had been naturally aroused by the Breus-Neumann controversy so that he was on the look-out for this class of cases and, where this condition was suspected, the ovum was removed with the greatest care so as not to injure the pathological specimen. By this means I was enabled to obtain eight hematoma-moles for the purposes of my research, all of which met the requirements set by Breus for this form of pregnancy.

I must refrain from giving here a detailed description of these cases. Such a description has already been elsewhere published.⁴⁵ It is rather my purpose to present a general clinical and pathological picture of this disease as far as I have been able to construct it from my own observations and those of others.

Altogether there have been thus far reported forty-two cases of hematoma-mole as follows: Pernice (1), Krause (1), Breus (5), Walter (1), Delbanco (1), Marocco (1), Costa (1),

Ahlfeld (2), Davidsohn (2), Micholitch (2), Taussig (8), Gottschalk (1), Griziotti (1), Ferroni (3), Brosin (1), Endelmann (2), Engelmann (1), Falk (1), Hart (3), Schauta (1), Orgler (1), Bauereisen (1), Mirabeau (1).

Hematom-moles are found most frequently in women from 25 to 35 years of age. Primiparæ are rarely affected and in most cases a large number of pregnancies (up to twelve) have preceded. Often there is a tendency to miscarriage. In one of my cases the patient had four abortions in the year preceding the formation of the hematom-mole. The number of cases thus far reported is too small to say positively whether or not endometritis is a precursor to their formation, but the assumption seems probable. In one of Breus' cases, however, the pregnancy immediately succeeding marriage developed into a mole of this kind.

The patients usually come to us with a history of "missed abortion." After several months in which pregnancy progresses as usual they begin to notice that their abdomen is no longer increasing in size as it should. There may at this time be a slight bloody discharge for a few days accompanied by backache or bearing-down pains, but nothing is expelled and the symptoms again subside. At the end of the fifth month the patient fails to notice any fetal movements. The abdomen continues to remain of the same size and the patient begins to doubt whether she is really pregnant after all. The only symptom which makes her think something is wrong is the absence of anything like a regular menstrual flow. Slight bleeding for a day or two may occur off and on. At a time varying in individual cases from the sixth to the twelfth month after conception a more persistent bleeding sets in. This is usually accompanied by bearing-down pains, and if the patient has not already consulted her physician, she now comes to him for relief of these symptoms. Breus said that bleeding occurs rarely but in three-fourths of my cases and in many of the cases reported by others there was a more or less persistent hemorrhage lasting often for several months previous to the expulsion of the ovum.

On examination the uterus will usually be found enlarged to the size of a child's head, of a consistency considerably softer than that of the normal uterus and yet distinctly harder than that of a pregnant uterus of the third month. It may, in fact, give rise to the suspicion of a myomatous uterus and that diagnosis has in fact been made by such able men as Schauta and Fritsch. In Fritsch's case reported by Engelmann¹¹ the uterus was removed by supra-

vaginal amputation before the true condition of affairs was discovered.

The bloody discharge rarely has an offensive odor and may be serous in character or mixed with clots. Unless complicated by other troubles there is no tenderness on palpation.

Such in the main are the symptoms of this disease, although they may vary greatly in individual cases. It will be evident from this résumé that a positive diagnosis is in many cases very difficult, and at times, in fact, impossible. The differentiation will be primarily from (1) delayed abortion, (2) hydatid mole, (3) myomatous uterus.

In delayed abortion the emphasis must be laid upon the presence of fever and odorous discharge, which is lacking in these moles. In hydatid moles the uterus usually increases more rapidly in size, the bleeding is more profuse, and in many cases the discharge will contain the typical hydatid formations. In myomatous uterus the previous history will usually show some menorrhagia before the onset of the trouble and the uterus is more apt to be irregular or nodular in shape.

The prognosis is favorable both as to the immediate outcome and the future. No great amount of blood is lost unless the bleeding is allowed to continue for a very long time. The ovum is usually expelled in one mass so that the danger of infection is not great. In one of my cases the patient passed through a second molar pregnancy within a year after the expulsion of the first mole. As no further instance of such a repetition has yet been recorded, the assumption is not justified that there is any tendency to recurrence in hematom-moles. Although the fetal epithelium shows at times a marked proliferating tendency, the uterine wall is not infiltrated by it, and no such malignant sequellæ as after hydatid moles have been noted.

The treatment consists, of course, in the evacuation of the uterine cavity. This can usually be accomplished by cervical and vaginal tamponade. In a number of cases Professor Wertheim performed a vaginal hysterotomy, incising the anterior cervical wall through the internal sphincter and then emptying the uterus of its contents. As the mole is but loosely attached to the uterine wall it usually comes away as a whole, and a subsequent curettement is rendered unnecessary.

Turning now to the pathologic characteristics of the hematom-mole, we have as its main feature the presence of an amniotic cavity out of all proportion in size to the minute embryo and en-

croached upon by numerous subchorionic hematomata varying in shape from broad-stemmed to polypoid forms. Depending probably upon the state of development of the placenta at the time of the hematoma-formation, we can distinguish two classes of these moles. In the one the hematomata are found scattered about the entire surface of the ovum. They are usually more or less isolated and polypoid in shape. In the second class the placental site is already clearly defined and the hematomata are limited to this area. They usually have a broad base and are closely

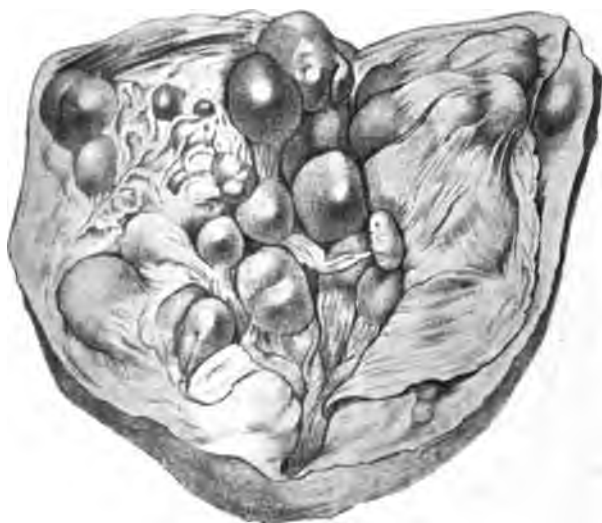


Fig. 1.—Hematoma-mole of the polypoid variety (Breus). The cylindrical embryo is seen attached by a hydrotic umbilical cord to the ovum. The hematomata are scattered about the entire surface of the ovum and are polypoid in shape. Between them the chorio-amnion can be seen to lie in folds.

wedged one against the other. Examples of these two types may be seen in Figs. 1 and 2.

In size the hematomata vary from that of a cherry to that of a small apple. Occasionally several may be joined into a complex group. Over them the chorio-amnion stretches usually as a tensely drawn covering, while between them it is looser, and is frequently gathered into folds.

Of special interest is the disproportion between the ovum and the embryo. The former varies in its greatest diameter from 6 to 10 cm., and the amniotic cavity is usually only slightly smaller

than this, so that it is out of all ratio to the little embryo, which is anywhere from 7 to 20 mm. in length. Gottschalk rather arbitrarily set 17 mm. as the extreme upper limit for these mole embryos, but a matter of a few millimeters cannot serve to exclude ova that have the other characteristics of these moles from being classed together with them. Usually a small quantity (5-15 cm.) of a sero-sanguinous amniotic fluid is present. The umbilical cord varies in length and is usually hydropic.

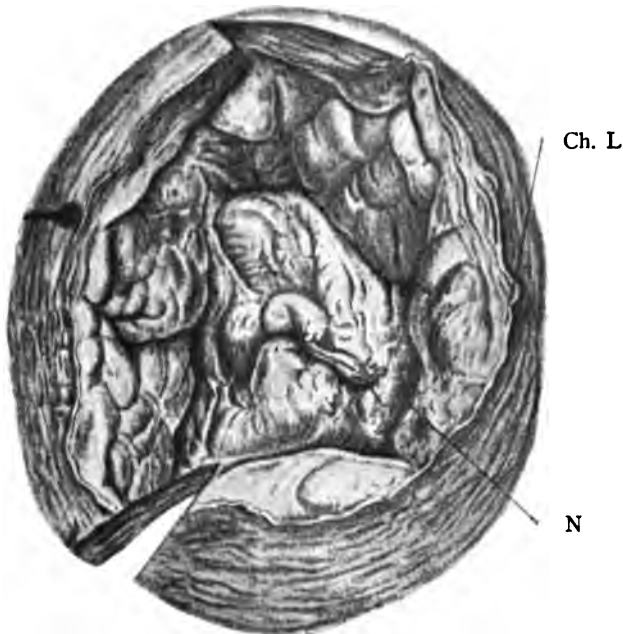


Fig. 2.—Hematom-mole (Tausig). Here the hematomata are grouped together and have a broader attachment. The embryo is of the "bent" variety. Ch. L—chorion laeve; N—umbilical cord.

In a number of the cases reported (Delbanco⁸, Walther⁴⁸, Orgler³⁶, and cases 1 and 3 of my series) no trace of fetus or umbilical cord could be found. Such a complete absorption is in itself an indication of the small size of the embryo, and together with the absence of a well-marked placental site and the presence of all the other characters that distinguish this mole justify their being included in our consideration.

The fetus as stated is from 7-20 mm. in length, approximately therefore from the third to the sixth week of gestation. In a ma-

jority of the cases it is of the "cylinder" type described by His²¹. In the very careful microscopic study of two of the embryos in my series made by O. Grosser, of Vienna, no evidences were discovered of an anomaly that could account for the premature death of the fetus. The heart and blood-vessels were normally established. It was found that the stage of embryonal development was more advanced than the size of the embryo would have led one to expect. In one case the length was 11 mm., whereas the development was that of an embryo of 20-30 mm. length; in the other the length was 15 mm. and the development that of 20-25 mm. The former one had been longer retained in utero, and as the observation in these cases was almost universal that the longer retained ova contained the smaller embryos, it naturally led to the assumption that this might at least in part be due to a general shrinkage (*Schrumpfung*) of the latter. Dr. Grosser's examinations showed that evidences of such partial absorption could be seen in the shrinkage of the body as a whole and the falling in of the cerebral ventricles. It is to be hoped that further studies in embryonal pathology will throw more light on some of these points.

Microscopically we find the various structures of the mole for the most part well preserved. The decidua in a few of the specimens showed necrosis or necrobiosis, but, as a rule, the cells, though somewhat more spindle-shaped, retained their normal contour and staining capacity, and the decidual vessels showed no evidence of disease. Hence Berry Hart's theory making these moles dependent on thrombosis of decidual vessels is certainly not true for all cases.¹

The pieces of uterine mucosa which Gottschalk obtained by curettement in his case showed no traces of decidua. He concludes that the mucosa had regenerated while the ovum was still in utero. In two of my cases, however, and in those of Engel-

¹A similar theory has again been brought forward in the last number of the *Zeitschrift f. G. u. G.* (Bd. 51, H. 2) by Bauereisen², an assistant of Professor Veit. From the examination of one case he comes to the conclusion that chorionic villi lodging in the decidual vessels (he is evidently under the influence of Veit) are responsible for blood stagnation in the intervillous spaces with the gradual formation of the blood-tumors as a result. As a secondary cause of the peculiarities of the mole, he includes hydramnios of the ovum and growth of the membranes after fetal death. Finding an endometritis in his case, he unreservedly gives this as the predisposing cause of the mole formation.

mann¹¹ and Bauereisen² decidua was found in the uterine mucosa in normal quantity and character.

In most cases there appears in the outer zone of the ovum an infiltration with leucocytes varying in amount. From this we cannot, however, conclude that an inflammatory process exists, since such an infiltration is an accompaniment of almost all retained ova. In the mole of my series in which there was a complication with hydatids, the leucocytic infiltration also extended to the uterine mucosa and here undoubtedly an endometritis was present.

As to the hematomata, they were situated in the intervillous spaces between decidua and chorion. Breus' assumption of a decidual hemorrhage in these cases must be put aside in favor of the later view that the blood-tumor is formed by a growth and partial dilation of the original intervillous spaces. The blood is in various stages of absorption, is in layers and composed largely of channeled fibrin. The hematoma gives the appearance of having accumulated gradually by successive additions of blood-cells. In a few cases a deposit of calcium salts in the hematoma and the syncytium was noted, an observation previously made by Gräfe¹⁷ in his studies of long retained ova.

In the center of the blood-clots the chorionic villi were more or less in a state of necrosis, but wherever free blood was still to be found they were in excellent preservation, and the syncytium in particular showed evidences of active proliferation, sending forth processes far out into the blood-stream. Evidences of a distinct Langhans layer were seen in only a few cases. The chorionic connective tissue did not show the embryonal character usually found in placenta at this stage of development, but had a distinctly fibrous character and contained large numbers of spindle-shaped cells. Whether this was due to compression or proliferation or to both could not be positively ascertained. Traces of chorionic vessels were observed by Davidsohn, Ferroni,¹⁸ Engelmann and others, so that we must drop the Gottschalk theory that their absence is in any way connected with the pathology of this condition. In the umbilical cord blood-vessels could always be readily distinguished, and their absence in more distant parts of the placenta is rather to be expected in view of their delicate character and the long post-mortem retention of the ovum.

The amnion is usually less well preserved than the chorion, but in at least one of my cases showed a most striking proliferative tendency. Here, for some reason or other, possibly the rupture of

a hematoma, there had been an extravasation of blood into the amniotic cavity. As you can see from Fig. 3, the blood pigment deposited on the amnion was surrounded by the proliferation of the amniotic epithelium and at least in part absorbed. In the neighborhood of these masses were found numbers of large cells containing blood-pigments.

As a rare complication of the hematoma-mole may be consid-
Ch. Am.



Fig. 3.—Chorion-amnion at the base of a polypoid hematoma with blood remnants in the amnion. Am—amnion; Ch—chorion.

ered the combination with hydatidiform degeneration. The case reported by Micholitch,³¹ and later studied microscopically by myself, is certainly of unique interest. Marchand²⁷ emphasizes the fact that just in cases of retained ova there is often found an edema of the chorionic villi resembling that seen in vesicular moles. He cites a case in which the vesicles were as large as a small pea. In Micholitch's case they were the size of a hazelnut and in typical racemose formation. Yet microscopically there

could be seen none of the proliferation of the Langhans layer usually observed in hydatid moles, nor was there any involvement of the deeper structures, decidua or mucosa, by the fetal epithelium, so that some doubt must exist whether the case is one of true hydatid mole. Mayer,²⁹ in 1874, described a "mola hydatidosa carnosae," which possibly belongs to this category.

A form of degenerated ovum resembling the hematoma-mole has also been found in cases of tubal pregnancy. In 1903 Ferroni,¹³

H.



H.

E.

E.

Fig. 4.—Hydramnios-ovum retained in utero four months. $\frac{3}{4}$ actual size. Embryo measured 8 mm. in length. Ovum measured 9 cm. in diameter before opening. E—Embryo attached to membranes by a short umbilical cord; H—disc-shaped hematoma, a portion of which has been cut off for microscopic examination.

who applied thereto the name "mola hematomatosa tubaria," gave the first accurate description of such a case, and since then Schauta⁴⁴ has reported one case and Micholitch³² two, making a total of four in all. The characteristics of the mole in this location are not as well marked as in the uterine form, and I think we must be cautious about making the diagnosis too frequently. Subchorionic hemorrhage with partial obliteration of the amniotic cavity is after all not so very rare. In none of the cases of tubal hematoma-mole has the polypoid form of the blood-tumors been observed. They are either sacculated (Schauta) or hemi-

spherical (Ferroni) and occur over the entire surface of the ovum. The disproportion between the size of the tumor and the duration of the pregnancy as well as that between the size of the embryo and the size of the ovum is not so decided as in the uterine form, but is nevertheless present. In Ferroni's case the embryo was 4 mm. long, the ovum the size of a hen's egg and the duration of pregnancy over four months. In Schauta's case the embryo was 3 mm. long, the ovum as large as a small apple and the pregnancy had lasted five months. Very likely similar factors govern the formation of these moles, though these are naturally modified by the altered mechanical and histological differences in tubal gestation. From the reports thus far made both embryo and ovum seem to be smaller than in the uterine form, the duration of gestation less protracted and the hematomata less bulging.

If we now come to a consideration of the causes and manner of formation of these moles we at once find ourselves in the midst of the most puzzling problems in pathological embryology. If it be attempted at all to solve some of these problems, it is with the consciousness that in many respects additional proof is necessary.

From the earliest times there have been theories as to the causes of mole formation. In the 17th and 18th centuries Lamzweerde,²⁴ Voigt⁴⁶ and Richmann⁴⁰ were particularly interested in this subject, and many and curious are the reasons that were assigned for their development. Among those who have taken up the question of hematoma-moles in modern times there have been almost as many theories as writers. Fortunately some of these can now be laid aside as disproven (Gottschalk, Hart).

What is most striking and most needs explanation in these moles is the disproportion between the size of the ovum, the surface area of the membranes and the length of the embryo. To commence with, the embryo which averages 12-15 mm. long is too small for the 7-9 cm. long ovum in the condition in which it is expelled from the uterus. If, however, we imagine the folds and invaginations smoothed out and picture the embryo in the space thus obtained, the extent of the disproportion becomes even more apparent.

Neumann, Meyer³⁰ and others seek to explain this on the ground that the subchorionic hemorrhages cause excessive dilation of the membranes. Doubtless a certain amount of stretching does take place in this manner, particularly at the apex of the large hematomata, but compared with the total area, this is inconsiderable. Moreover, such dilation does not explain the

excess of membranes witnessed in the plentiful formation of folds at points where no hemorrhage has occurred. Even if we leave out of consideration these folds and invaginations, the volume of the ovum is greater than would correspond to the size of the embryo. If one examines the mole drawn in Fig. 2, it is evident that the amniotic cavity is to a certain extent obliterated by the projecting hematomata. But even the space thus left is greater than would be expected in an embryo of that size.

We must therefore assume that a growth in the membranes has taken place. The question remains, though, at what time such growth took place, whether *before*, *during* or *after* the death of the fetus.

If the growth occurred *before* the death of the fetus we must take for granted a disproportionately rapid increase in the membranes and amniotic fluid; in other words, the formation of a hydramnios-ovum. Such a primary hydramnios-ovum was in fact suggested by Davidsohn as the first step in the formation of the hematom-mole. It must, however, remain mere hypothesis so long as we have no examples of such ova with an embryo that shows signs of having been dead but a short time. In the hydramnios-ova thus far obtained the embryo, though well preserved, shows signs of degeneration (cylinder or bent form of His), pointing to a retention for a long period after death.

The second possibility, *i. e.*, that the excessive growth of the membranes occurs *simultaneously* with the death of the fetus, takes for granted that the death is a very gradual one. But in these hydramnios-ova neither malformations in the embryo nor circulatory disturbances in the placenta have been discovered sufficient to cause such a gradual death.

There remains hence only the assumption of a growth of the membranes *after* fetal death. Opinions vary greatly as to the possibility of such a growth under these circumstances. Breus and Gottschalk take an affirmative position in this question.

Those who oppose this view are in general of the opinion that the chorio-amnion can continue to be nourished, that the epithelium can proliferate, but that there is never a new formation of villi, a true increase of placental tissue after the death of the fetus; Marchand, v. Franqué¹⁴ and Gräfe¹⁷ are among those who hold this opinion.

On the other hand, the embryologists as a whole, particularly those who have made a special study of the embryological pathol-

ogy, cling to the idea that the membranes can grow after the fetus has died. Thus Mall²⁰ says:

"At an early stage after the formation of the amnion, through some unknown causes the embryo dies, or having been originally deformed, ceases to grow, while the amnion, cord and chorion grow on as if nothing had happened."

Similarly Giacomini¹⁸: "Während der Embryo allmählich zerstört wird und verschwindet, zeigen das Chorion und das Amnion nicht nur normale Constitution, sondern sie fahren auch fort, sich zu entwickeln. Es scheint als wenn die Summe der Lebenskraft, welche für die Ernährung und das Wachsthum des Embryos bestimmt war, gänzlich auf seine Hilfsorgane übergeht."

Physalix,³⁹ His²¹ and Schäffer⁴³ are also of this opinion.

It is not so much a question of whether any growth occurs as the extent of that growth. And here the material at hand must be judged with a certain reserve since it deals with ova that have been retained in utero several months. If, therefore, we found in our specimens no positive signs of this new formation of villi, the conclusion does not necessarily follow that such did not at any time take place.

Against the assumption of Breus and Gottschalk that there is only a surface growth of the membranes can be brought the absence of all analogy. Moreover, this view, as Davidsohn rightly emphasizes, does not explain the size of the ovum itself.

It is not at all necessary, though, to assume such a surface growth with invagination of the membranes. A far simpler explanation is it to suppose that the membranes continue to grow after fetal death, and that at the same time the amniotic fluid increases in quantity so that a secondary hydramnios-ovum is formed. We are of the opinion of Georg Engel,¹⁰ who, as a result of the study of several hydramnios-ova, says: "We believe that only after the embryo for some reason at present unknown to us dies, does the hydramnios make its appearance."¹

It might be maintained that such a collection of fluid and increase in size of the ovum could not take place because the uterus

¹We can also conceive of an increase of amniotic fluid without any growth of the membranes as a whole. Even those like Neumann and Gräfe who most vigorously oppose the view that the membranes can grow after the death of the fetus, acknowledge that osmotic processes can take place at this time. Such an osmotic increase of amniotic fluid can readily be conceived as causing a stretching of the membranes, in this way explaining the increase in their surface area.

does not increase correspondingly. But we have cases of large hydatid moles with hydramnios that develop long after the tiny embryo has been absorbed. Even in simple retained abortions it frequently happens (in Schäffer's eleven cases five times) that the amniotic cavity is far greater than one would expect to find with such a small fetus. The ovum does not, as a matter of fact, always act as a foreign body immediately after the death of the fetus. As long as membranes and decidua retain their connection the amniotic fluid can increase in amount through osmosis and the ovum can increase in size without evoking uterine contractions. Why the growth of the membranes stops when it reaches a certain point is still one of the unsolved problems.

In illustration of these hydramnios-ova I should like at this point to report briefly the history and findings in a case of this kind that I had occasion to observe recently in private practice.

The patient, M. W., twenty-three years of age, had been married five years. No previous pregnancy. For several years had leucorrhea, backache and dragging pains in the pelvis. Menses regular, three to four days in duration, painless. Last menstruation in the middle of September. In October had typical morning sickness. No symptoms on the part of the breasts. When she came to me on February 11th she said she had had some bleeding and abdominal pains for the past week; in the past two days bleeding more severe and accompanied by clots. Examination showed a uterus somewhat softened, corresponding in size, however, only to about a two months' pregnancy. She was ordered rest in bed and given sedatives, but the following day the ovum was expelled. The measurements taken before preservation showed the greatest diameter of the ovum to be 9 cm., the length of the embryo 8 mm. The placental site had not yet been established, villi being found in all portions of the ovum. The decidua was lacking in the area near the point of insertion of the umbilical cord. The embryo was well preserved but deformed. At several points where the decidua was intact could be seen small, *disc-shaped subchorionic hemorrhages*.

Microscopically a section through one of these hemorrhagic areas showed amnion, chorion and decidua in an excellent state of preservation. No traces of chorionic blood-vessels were discovered. The hematoma was composed of recently clotted blood lying in a network of fibrin between chorion and decidua. Beneath this blood-clot and between the chorion villi a small quantity of unclotted blood could be seen.

From the history of a pregnancy four months in duration the disproportion between ovum and embryo and the beginning hematoma-formation, I believe that we possibly have here an example of the initial stage in the formation of one of these hematoma-moles.

To characterize in conclusion the main points concerning this form of degenerated ovum:

The hematoma-mole is a form of "missed abortion," in which the uterine retention lasts usually from six to eleven months; in which not merely the ovum as a whole but also the amniotic cavity and the fetal membranes that at points lie in folds, is proportionately very large in contrast to the minute embryo, and in which there are found subchorionic hematomata varying in size and number, usually of a tuberous or polypoid shape. A form of hematoma-mole somewhat similar to this is occasionally found in tubal gestation.

Examination of the fetuses in these cases has thus far revealed no reason for their premature death. They are somewhat smaller than their stage of development would indicate, due probably to shrinkage, but even allowing for this shrinkage the disproportion between ovum and embryo remains very great.

Our view of the formation of this mole is as follows: After the death of the fetus in the first or second month of gestation, the fetal membranes and the amniotic fluid increase in volume. Thus arises a secondary hydramnios-ovum. This growth continues up to a certain point. The ovum is retained. The amniotic fluid is then gradually absorbed and the ovum as a whole shrinks somewhat in size. By the negative pressure thus produced folds or invaginations of the membranes arise which become filled with the blood circulating in the intervillous spaces. By continued absorption of the fluid, together with a certain degree of stretching of the membranes by the blood-clots, we have the formation of the hematoma-ata. In this process the insertions of the villous-stems act as fixed points. If the stems are close together a hemispherical or broad-based hematoma results; if far apart, a tuberous or polypoid hematoma.

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AN EPIDEMIC OF PEMPHIGUS NEONATORUM.

BY

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PEMPHIGUS neonatorum, according to Kaposi, is "an affection of the skin of the new-born infant, sudden in onset, acute in its course, and which may or may not be accompanied by fever. The eruption consists of blisters, varying in size from that of a pea to a bean, filled with clear fluid which rapidly becomes purulent. Its distribution is irregular, the face, trunk and extremities being most often attacked. After two or three days the blisters dry, forming crusts, which soon fall off, leaving a red surface, which later may be slightly pigmented."

Pemphigus neonatorum is highly contagious. Epidemics of it were formerly frequent in lying-in and foundling hospitals. During the last twenty years, however, probably owing to the improvements which modern methods have brought about in such institutions, the trouble has been very rare.

I have therefore thought it of interest to describe an epidemic which occurred in the New England Hospital during my service in 1903.

On June 22nd my attention was called to a small blister on the leg of an infant two days old, which I recognized as pemphigus.

Although I knew that pemphigus was contagious, I was far from realizing the high degree of contagion, and therefore simply ordered the child to be separated from the others in the nursery, and cautioned the nurse to disinfect her hands after touching it.¹

Two days later two more babies were similarly affected.

The three children were at once removed from the nursery, placed in a room by themselves, under the charge of a nurse who had nothing to do with the other children.

From June 22nd to July 3rd five additional cases developed, and were at once isolated. Of the eight cases now reported four were in the house at the beginning of the outbreak, while the other four were born after the first set had been isolated.

¹In this hospital all the babies are kept in a nursery, cared for by a special nurse, and only taken to their mothers at regular intervals for nursing.

In addition to the isolation of the sick babies, the well ones were removed temporarily from the nursery, which was thoroughly cleansed and fumigated.

Early in the epidemic the cases were seen by Dr. Meek, our specialist in dermatology, who confirmed the diagnosis, and gave us the benefit of her advice as to treatment.

From July 2nd to July 11th no new cases developed, but on July 11th a fresh case appeared, followed rapidly by two more.

At the beginning of the outbreak, the house was so full that it was impossible to isolate the mothers as well as the babies, and the sick children therefore had been carried at time of nursing to their mother into the same wards as the well ones, though by a separate nurse.

It became clear, however, that isolation of the children alone was not sufficient to stop the spread of the contagion, so on July 17th the affected children, with their mothers, were removed to the medical building, where they were isolated under special nurses who never entered the maternity.

The nursery and maternity wards were again thoroughly cleansed and fumigated. The nurses and internes went through a course of disinfection. The practice of bathing the children in the nursery bath tub was discontinued, and the babies were carried to their mothers in the arms of the nurse instead of being conveyed there all at one time in the ward carriage.

The removal took place on July 17th. A new case broke out July 20th. It was possible that this might have been infected before July 17th, but on July 22nd and 26th two more cases appeared in children born after the fumigation had been completed. These cases seemed to show a severer degree of infection than the early ones, having, in addition to the eruption, furuncles and paronychia.

These, however, seemed to end the trouble, for although one case developed on August 9th, it was very slight, while the last one, on August 13th, showed only a single blister. Three mothers were infected, the point of infection being in each case the breast. One had only the pemphigus blisters, but the two others developed abscesses.

There were in all twenty-two cases, nineteen infants, and three mothers. The constitutional symptoms were very slight. There were no high temperatures, and most of the babies digested their food and gained in weight during the course of the disease. One infant, feeble and cyanotic from birth, died. The pemphigus cer-

tainly was not the cause of death, although it may have hastened it.

At the beginning of the outbreak, June 20th, there were twenty-three cases in the maternity, of whom seven were affected, or about 30 per cent. From June 20th to August 13th, the date when the last case appeared, there were forty-four deliveries, of whom twelve, or about 27 per cent., were affected.

We were never able to account for the origin of the first case. At that time the maternity was in excellent condition, and during the whole period there was no case among the mothers that suggested infection of any form.

Cultures from the blisters showed the *staphylococcus pyogenes aureus*.

The only record of any epidemic in this country which I have found was in 1889, at the New York Infirmary, by Dr. Eleanor Killam.¹

Out of eleven children born during this epidemic, eight were affected.

The classical epidemic referred to in all articles on the subject is that reported by Hervieux,² which occurred in the Maternity of Paris. It lasted from June, 1867, to January, 1868, during which time at least 150 babies were affected. The type seems to have been mild.

Olshausen³ reports an interesting epidemic observed by him in Halle, where it ran through the place, and hundreds of children were affected. This epidemic was characterized by the extreme rapidity with which the eruption spread, large numbers of vesicles appearing within six to twelve hours, chiefly in the inguinal region and on the head. These cases apparently followed the practice of certain midwives, who probably acted as transmitters of the contagion.

Other less extensive epidemics have been apparently spread by midwives. Thus Koch⁴ reports thirty-one cases occurring in the practice of a certain midwife, while another at the same time, among 200 births, did not have one.

The evidence seems so clear that the contagion may be conveyed by the clothes and hands of the midwife that an effort has been made in some German towns to oblige mid-

¹AMERICAN JOURNAL OF OBSTETRICS, 1889.

²L'Union Médicale, 1868.

³Archiv für Gynäkol., 1870, I.

⁴Jahresb. für Kinderheilk., 1875.

wives having such cases to report them, and refrain from taking fresh confinements until thoroughly disinfected.

Notwithstanding the evidence of extreme contagion, attempts to inoculate children from the contents of the vesicles have apparently failed.

Several German writers, notably Baginski, in his "Handbuch für Kinderkrankheiten" (last edition), describe two forms of pemphigus neonatorum, the benign and the malignant.

The benign form is the one we have described, with moderate eruption and slight constitutional symptoms.

The malignant form begins with high fever and marked symptoms of severe infection.

The eruption spreads rapidly until it undermines nearly the whole epidermis, which is described as hanging in rags from the surface of the body. The high temperature is soon succeeded by a sudden fall, with symptoms of collapse. Such cases are almost invariably fatal.

The most extensive report of these severe cases is found in the *Archiv für Kinderheilkunde*, 1900, reported by Prof. Bloch. A series of about twenty cases were observed by him in a foundling hospital. All were fatal. Some writers refuse to class these cases as pemphigus, and consider them as "dermatitis exfoliativa." In support of the opinion that these are really a severe form of pemphigus Prof. Bloch states that large numbers of the milder form of undoubted pemphigus occurred in the hospital at the same time. Cultures made from the blisters in both severe and mild forms gave the staphylococcus pyogenes aureus, but cultures made from the blood of the malignant cases showed the streptococcus, which was not found in that of the mild type.

At a meeting of the London Obstetrical Society in 1903 a paper on pemphigus neonatorum was read by Dr. Geo. McGuire.¹ He reports an epidemic observed by him in the out department of a lying-in charity at Richmond. Of twenty new-born babies, eighteen were affected, of whom eight died. Besides these a number of mothers and older children of the same families contracted the disease. In all the fatal cases the umbilicus was more or less inflamed, whence Dr. McGuire deduces the supposition that in these cases the infection was conveyed to the system by way of the umbilicus. He reports the cultures from the blisters to contain the staphylococcus pyogenes aureus. There is no record of any cultures of the blood. The fatal cases were not reported in detail, so we cannot decide whether they were similar

¹British Medical Journal, Nov., 1903.

to the so-called "malignant" form described by Baginski and others.

The origin of this disease is obscure. The theory that it comes from an irritation of the skin produced by too hot baths has been abandoned. It is now generally admitted to be an infection, but the form and source of the infection is by no means clear.

Its frequent appearance in lying-in hospitals and among midwives has given rise to the supposition that its cause is the same as that of puerperal sepsis. I have already mentioned in connection with the epidemic of the New England Hospital that the maternity was in most excellent condition at the time of the outbreak and during its continuance, so that there was here absolutely no reason to connect it with puerperal sepsis.

Some writers believe that all cases are of luetic origin. There is undoubtedly a syphilitic pemphigus, but these epidemics have none of the characteristics of a syphilitic infection.

Mention is made by some writers of pemphigus following in the wake of impetigo contagiosa. The mother of the first child affected in the New England Hospital was apparently healthy, and we could get no history connecting her with any disease of the skin.

In the accounts given of epidemics of pemphigus no mention is made of the means taken to limit the spread of the disease. So far as we can judge it was allowed to wear itself out.

From our experience at the New England Hospital we were convinced that there is absolutely no means of stopping the spread of the infection except complete isolation of both mother and child.

Treatment was limited to washing the skin with a weak solution of bichloride, opening the large blisters with special care so that the contents should not spread over the sound skin, and dressing them with either dry boric acid or boric acid ointment. This apparently kept the children fairly comfortable, but did not appear to have any effect in shortening the disease. The average duration of the eruption in well-marked cases was eighteen days.

I find the statement made in several articles that the eruption appears about the end of the first week of life, and seldom, if ever, later than the tenth day. We had several cases as early as the third day, and others as late as the fourteenth, nineteenth and even in the twenty-first day. As many lying-in hospitals discharge their patients at the end of the second week it seems probable that this fact has more to do with the absence of later infection than any limitation of the time of susceptibility.

REPORT OF TWO CASES OF TUBERCULOSIS OF THE OVARY.

(From the Pathological Institute of Prof. Chiari, in Prag.)

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ALTHOUGH within recent years a gradually increasing number of cases of tuberculosis of the ovary have been reported, tuberculosis affecting secondarily a cystadenoma of this organ is still among the rarities of pathology. Under the latter heading comes the case that forms the basis of the first part of this article.

CASE I.—Marie C., aged 72 years, was admitted to the Jewish General Hospital in Prag in September, 1903. She had been repeatedly treated in this institution for cardiac palpitation and dyspnea that were most marked upon exertion. At the time of admission, shortly before death, she was again suffering from these symptoms. Edema of the lower extremities had been present during the two weeks preceding. The following is a brief abstract of the condition upon admission: There is very marked anasarca with free fluid in all the large body cavities. Hypertrophy of the left ventricle of the heart, accentuation of the second aortic sound. Lungs and abdominal viscera normal. In the pelvis a cystic tumor the size of a child's head, not tender to palpation, and apparently arising from the left ovary, can be detected. Under treatment the anasarca gradually decreased, but death from progressive inanition occurred on October 5, 1903. Clinical diagnosis: Chronic nephritis, myocarditis, cyst of left ovary. For the history of this case I am indebted to Dr. Saar, resident physician of the hospital. The autopsy, of which a report follows, was performed on October 6. The body is 165 cm. long, very emaciated. Marked anemia of the skin and visible mucous membranes. Abdomen retracted. External genitals normal. Thyroid slightly enlarged and shows colloid degeneration. Lungs not adherent. In the apices are cicatrices and old tubercular foci. Both lungs are thickly studded with miliary tubercles. Peribronchial lymph nodes show caseous degeneration. Pericardium totally adherent to heart. The cardiac valves as well as the intima of the aorta show here and there yellow lines in the aorta; there

are also nodular elevations. In the lower third of the esophagus are two small traction diverticula. The liver is markedly fatty, and as well as the spleen and kidneys, shows numerous miliary nodules. The abdomen has no abnormal contents. In the lower part of the small intestine is a moderate number of small, discrete, tubercular ulcers. The gall-bladder contains dark bile. Upon its fundus is a nodule the size of a hen's egg, showing caseous degeneration.

In the uterus are three small, broad sessile polyps. The left adnexa are normal. The right ovary is transformed into a flaccid cyst the size of a man's head, and is filled with cloudy, serous fluid. The right tube stretches over the cyst and is much elongated. The inner surface of the cyst is covered with a yellowish deposit and shows numerous miliary nodules. Similar nodules are present on the peritoneum covering the cyst and lining Douglas's cul-de-sac and in the mucous membrane of the right tube. Autopsy diagnosis: General miliary tuberculosis; chronic tuberculosis of the pulmonary apices and peribronchial lymph nodes, and of a lymph node in the neighborhood of the gall-bladder; tubercular ulcers of small intestine. Adherent pericardium; general hypertrophy of the heart; chronic deforming endarteritis. Traction diverticula of the esophagus. Fatty infiltration of the liver. Adenocystoma of the right ovary with tuberculosis of cyst wall and of right Fallopian tube; mucous polypi of uterus. Description of cyst, museum No. 5854: The right ovary presents itself as an oval cyst 16x19 cm., in which ovarian tissue cannot be macroscopically recognized. It is firmly bound by adhesions to the right Fallopian tube and to the right side of the uterus. Its surface is uneven, covered with old and fresh adhesions, and shows a few scattered, greyish-white nodules about the size of a pin's head. Upon its internal surface is a uniform, yellowish, caseous deposit that can be readily scraped off, disclosing a smooth cyst wall over which run many small blood-vessels. This surface is also uneven, and shows numerous yellowish-white miliary tubercles, which are for the most part discrete, but here and there arranged in groups. At the lower pole of the cyst three daughter cysts project into the large cavity, although not communicating with it. Each of these secondary cysts is as large as an English walnut; the walls are smooth, showing neither the tubercles nor the caseous deposit found in the large cavity. The right Fallopian tube is markedly elongated, measuring 39 cm.: its lumen, which is patent in its distal portion to within 10 cm. of its

entrance into the cavum uteri, is not dilated. The tube curves over the anterior surface and upper pole of the ovarian tumor and then lies posterior to it, the fimbriated extremity lying on a level with the uterine cervix. In its proximal third the tube and ovary are firmly adherent to one another. The mucous membrane of the tube is injected and its folds contain many greyish-white miliary nodules.

The uterus is displaced to the left. The body measures 4 cm.; its cavity is not dilated. Upon the posterior wall immediately above the internal os, a sessile tumor, one cm. in diameter, projects into the lumen; two slightly smaller and similar tumors lie above it and to the left. The cervix is dilated, its almost circular cavity measuring $2\frac{1}{2}$ cm. in diameter. It contains a small amount of mucus. In neither cervix nor body of uterus can tubercles be macroscopically demonstrated. From the peritoneal surface of the fundus a tumor the size of a pea projects into the peritoneal cavity. The peritoneum of the pelvic cavity shows numerous miliary nodules. Histological examination of the pelvic organs gave the following results: The inner surface of the large cyst shows a uniform, necrotic, structureless layer beneath which is a narrow zone of small, round-celled infiltration in which lie many typical miliary tubercles with giant cells. Between the necrotic mass and the zone of infiltration a single layer of flattened epithelial cells with elongated nuclei is preserved. Corresponding with the projections on the inner wall of the cyst are numerous microscopic cysts lined by a continuous layer of low cuboidal epithelium. External to the zone of tubercles is a broad band of dense connective tissue containing very few cells, the latter becoming more numerous toward the peritoneal surface. The peritoneum is thickened and contains a few young miliary tubercles without giant cells. The daughter cysts show the same structure as the microscopic cysts already described. Remains of ovarian tissue are sparingly present. The mucous membrane of the right Fallopian tube is everywhere thickly infiltrated with small round cells, and also shows miliary tubercles. The muscular coats are normal. The peritoneum of the recto-uterine pouch is thickened and contains a few miliary tubercles. Neither cervix nor body of uterus shows any evidence of tuberculosis. The tumors within the cavity of the uterus show the ordinary structure of uterine polypi: that upon the fundus is a myoma.

Tubercle bacilli in small numbers can be demonstrated wherever miliary tubercles are found.

This case, therefore, is undoubtedly a tubercular infection of an ovarian cyst. A considerable number of such cases have been reported. From previous articles and from the literature I have been able to collect the following cases, 19 in all: Krzywicki,¹ Edmunds,² Heiberg,³ Klebs,⁴ Sturges,⁵ Schottländer (2 cases),⁶ Sängner,⁷ Gade,⁸ Madlener,⁹ Ohlshausen,¹⁰ Grusdew,¹¹ Baumgarten,¹² Kelly,¹³ Prüsman,¹⁴ Wechsberg,¹⁵ Elsässer,¹⁶ Griffiths,¹⁷ Wells.¹⁸

A more critical review of these cases demonstrates that this complication is rarer than the above figures would seem to indicate. Madlener has divided the tubercular cysts of the ovary into (a) those in which a cyst adenoma of the ovary has become secondarily infected, and (b) those that represent large cysts occurring as the result of caseous degeneration of a tubercular focus. The caseous mass constantly increases and the encapsulating ovarian tissue is in consequence distended. It is to the latter class, not true ovarian cysts, that some of the above cited cases belong. Such are the cases of Madlener, Griffiths and Heiberg. Of the remaining cases, Krzywicki himself suggests that his case was one of encapsulated peritonitis, while Grusdew leaves it undecided whether his case was also of this nature or a true adenocystoma of the ovary. The reports of Edmunds and Sturges are too incomplete to admit of their classification under either of Madlener's two groups.

A final point of interest lies in the mode of infection. Direct infection through repeated puncture is attributed as the cause in Sängner's case. While undoubtedly most cases of ovarian tuberculosis have been associated with, and secondary to tuberculosis of the peritoneum or Fallopian tubes, the theory of the hematogenous mode of infection is now generally accepted. In our case we believe the infection to have occurred through the blood channels despite the associated tuberculosis of the peritoneum and tube. The presence of an acute general miliary tuberculosis, the uniform stage at which the process was found in the cyst, tube and peritoneum, the absence of evidence of an old, general tubercular peritonitis,—all these facts lend support to the theory of the involvement of the cyst as a part of a general infection through the blood, the primary focus lying in the chronic tubercular process in the lungs or lymph nodes.

CASE II.—Tuberculosis of the left ovary; tubercular peritonitis; perforation into the intestine with secondary fetid peritonitis; death.

Marie K., 34 years old, a widow, was admitted to the clinic of Professor von Franqué in the General Hospital in Prag, September 24, 1903. Her family history is negative. Her husband died of tuberculosis. Three years before admission the patient had had an attack of what she describes as peritonitis and pneumonia. Two years ago she had had typhoid fever. Menstruation began in the seventeenth year; has always been regular; no dysmenorrhea. Last menstruation August 20, 1903. She has given birth to four children, two of which have since died of scarlet fever. The last child was born four years ago. She has aborted once. All the deliveries have been difficult, and the first two or three days of each puerperium have been associated with fever. Alcoholism and syphilis are denied. Since the last puerperium the patient has suffered from fever, diarrhea, increasing emaciation and weakness. She attributes her illness to having lifted a heavy weight shortly after the parturition, the result being some pelvic injury. For the past five weeks she has experienced severe pain in both sides of the pelvis; during the past two weeks this pain has become more intense. There have been diarrhea and dysuria. No vaginal discharge.

Physical Examination.—The patient is large, but slender. Panniculus adiposus moderate. Skin and pupils normal. At the right pulmonary apex there are dulness and a few subcrepitant râles. Otherwise the thoracic viscera are normal. The abdomen is distended. The liver and spleen are not enlarged. In the median line there is dulness from the symphysis pubis to three finger breadths below the umbilicus. The abdomen is tender to percussion. The external genitals are those of a multipara. There is no vaginal or urethral discharge. The external os shows a stellate laceration, and a cystocele and rectocele are present. The vaginal portion lies upon a level with the upper border of the symphysis, against which it presses. It is moderately large, slightly dilated, and movable. The body of the uterus lies anterior; it is moderately large, and immovable. Posterior to the uterus and somewhat to the right a resistance varying in consistency is encountered. There is a bulging of the posterior vaginal fornix. The resisting mass is in part cystic, and extends to three fingers above the posterior commissure. To the left of the uterus, reaching laterally to the pelvic wall and upwards to a hand's breadth above Poupart's ligament, a mass of doughy consistence, tender on pressure, is palpable. No distinct tumor is palpable.

On September 26, 1903, a puncture was made in the mass in

the posterior vaginal fornix, and clear serous fluid was drawn off. While in this clinic, as well as in that of Professor Pribram, to which she was later transferred, the diarrhea and dysuria continued. There were cough, fever, abdominal distention and tenderness. Emaciation was progressive. In the vaginal secretion no tubercle bacilli could be found. January 7, 1904, the patient voluntarily left the hospital, the pelvic condition having remained unchanged throughout. Two weeks later she was admitted to the clinic of Professor von Jaksch. The abdominal pains had become more severe. For five days there had been vomiting and constipation. The abdomen was extremely tender and painful, and markedly distended. Emaciation was extreme. No examination was made on account of the exquisite pain caused by even the slightest movement. Death on February 3, 1904, after symptoms of progressive inanition.

Clinical Diagnosis.—Pulmonary tuberculosis; tubercular peritonitis; tuberculosis of genitals. Summary of autopsy report: The body is 165 cm. long, poorly developed, and very emaciated. Pallor of skin and visible mucous membranes. Abdomen distended and slightly tense. The cervical organs are anemic, but otherwise normal. The right lung is totally adherent, very anemic, not edematous. At the apex is a circumscribed cicatrix. The left lung is free; it is also anemic, and shows distinct acute edema. There are old cicatrices at the apex. The foramen ovale of the heart opens obliquely, the aperture measuring 3 mm. in diameter. Otherwise the heart as well as the pericardium and intima of the aorta is normal. The peribronchial lymph nodes are anthracotic, but not otherwise pathological.

In the lower part of the abdominal cavity are about 2 liters of a fetid, purulent exudate containing yellowish-white flakes agglutinated into masses the size of a hen's egg. The peritoneum is thickened and ulcerated in many places behind the exudate. The liver is steatotic and anemic. All the abdominal viscera are firmly adherent to the peritoneum and to the neighboring organs. The spleen, kidneys, adrenals and pancreas are anemic, but not pathologically changed otherwise. The uterus is markedly retroflexed, the fundus being adherent to the posterior wall of Douglas' cul-de-sac. The right adnexa are firmly adherent to one another and to the surrounding tissues. The right tube contains scanty mucus. Its mucous membrane is thickened and yellow in color. The left adnexa are similarly adherent. The tube contains thick pus. The left ovary is enlarged to the size of a hen's egg and contains many

small abscesses, some of which are as large as a hazelnut. Some of the larger abscesses have already broken through the surface of the ovary. The mucous membrane of the uterus is pale; the walls of the blood-vessels are thickened. In the left half of the fundus is a subserous myoma the size of a bean. The vaginal mucous membrane is smooth.

On the posterior wall of the recto-uterine pouch there are large ulcerations of the peritoneum. In the ulcerated area there are two perforations through which the large intestine communicates with the recto-uterine pouch. One of these perforations is situated in the anterior wall of the rectum 11 cm. above the anus, while the second occurs at the middle of the sigmoid flexure where this loop is bent upon itself and is firmly adherent to the left ovary. Each perforation measures about 4 mm. in diameter. The mucous membrane of the intestine is pale, the only signs of inflammation being found in the immediate neighborhood of the perforations into the rectum and sigmoid flexure. The appendix vermiformis is firmly bound down by adhesions, and is twice bent upon itself. Its walls are normal.

Autopsy Diagnosis.—Chronic suppurative inflammation of the left Fallopian tube. Multiple abscesses of the left ovary. Ulcerative peritonitis with perforation into the sigmoid flexure and rectum. Quiescent tuberculosis of the pulmonary apices. Patent foramen ovale. Myoma utero. Marasmus and anemia.

In the pus from the abscesses in the left ovary many bacteria of different varieties, together with a few tubercle bacilli were found.

Description of specimen (museum, No. 5485). The left ovary measures 6x4 cm. It is displaced posteriorly in the recto-uterine pouch; to the walls of the latter as well as to the surrounding parametral tissues it is firmly adherent. The central portion of the organ is replaced by an abscess cavity the size of a walnut, containing thick pus. In the remaining ovarian tissue are numerous smaller abscess cavities, of which some are as large as a hazelnut. Many of these abscesses are superficial; two have already perforated into the pelvic cavity. The left Fallopian tube is markedly thickened, especially at its fimbriated end. It is elongated, measuring 9.5 cm., and, like the ovary, is firmly adherent to the surrounding tissues. Its outline is tortuous, the organ being bent upon itself at its midpoint so as to produce a constriction. It contains thick pus. The right ovary is but slightly enlarged. It is adherent to the peritoneum covering the

posterior wall of the pelvis. Its cut section is normal. The right Fallopian tube is adherent to the corresponding ovary except at its fimbriated end. It measures 6 cm. in length; its walls are thickened; its lumen contains a small amount of mucus; the mucous membrane is yellow. The uterus is extremely retroflexed, but not enlarged. From the left half of the fundus a small pea-shaped tumor projects beneath the peritoneum.

For microscopic purposes pieces were cut from the adnexa of both sides, and from the rectum and sigmoid flexure at the respective sites of perforation. The sections from the left ovary show an almost complete replacement of the tissue of that organ by tubercle tissue. Large areas of caseous degeneration are surrounded by a zone of round cell infiltration in which are innumerable miliary tubercles containing giant cells in large numbers. The mucous membrane of the left tube is entirely destroyed, the much-thickened wall showing a structure identical with that seen in the ovary. In both organs tubercle bacilli in considerable numbers can readily be demonstrated, lying either free in the tissues or enclosed within the bodies of the cells. Of these the multinucleated cells are especially affected. One such cell contains three bacilli, one lying at the center, and two among the peripherally-situated nuclei. The right ovary is normal. The mucous membrane of the right tube contains many miliary tubercles with giant cells.

The sections taken through the site of perforation in the sigmoid flexure show the following changes: The immediate wall of the opening is formed by a broad zone of necrotic, granular tissue that extends from mucous membrane to peritoneum. Beneath this the entire thickness of the wall is densely infiltrated with small round cells. This infiltration extends a short distance on all sides of the perforation beneath the mucous membrane. In it, but only in the immediate neighborhood of the perforation, a few miliary tubercles are seen. Here also tubercle bacilli, but in very small numbers, were found. The pathological changes about the perforation in the rectum are of a chronic inflammatory nature, and no evidences of tuberculosis can be demonstrated.

From both a pathological and clinical standpoint this case presents several features of interest. The sequence of events would seem to have been as follows: (1) a secondary tuberculosis of the left ovary and tube associated with tubercular peritonitis; (2) a continuation of the tubercular process through the wall of the sigmoid flexure at the point where it was bound by adhesions

directly to the surface of the affected ovary; (3) as a result of this involvement of the intestine by contiguity, a perforation of its wall causing a fetid, ulcerative peritonitis from the escape of intestinal contents; (4) finally a secondary perforation of the rectum through the ulcerative peritonitis.

As to the mode of infection of the ovary, two sources may be considered. The old tubercular foci at the process subsequently rise to the infection through the blood, the process subsequently extending to the adjacent tissues. This explanation seems the more probable. The hematogenous infection, as has been pointed out among others by Amann¹⁹ and Williams,²⁰ is probably of far greater frequency than is commonly believed. The latter author groups under the title of "unsuspected" cases a series of cases of acute general miliary tuberculosis in which tubercle bacilli were demonstrated in the ovaries without macroscopic changes. On the other hand, the possibility of the infection in our case having taken place through the vagina must not be overlooked. Altherthun²¹ states that the puerperium renders the vaginal infection more easy, and from the history it will be seen that the symptoms first appeared shortly after the last parturition. This fact, together with the quiescence of the pulmonary process and the absence of phthisis elsewhere, makes it impossible to exclude with certainty this mode of infection.

That the infection of the pelvic organs was secondary to intestinal tuberculosis is highly improbable. At only one point, the site of perforation in the sigmoid flexure, was there any evidence of intestinal tuberculosis, and here the preservation of the mucous membrane intact about the perforation, and the more advanced stage of the process upon the peritoneal surface point unquestionably to the invasion of the intestinal wall from the peritoneum inward. Finally the entire absence of evidences of tuberculosis about the rectal perforation leads to the conclusion that this perforation is secondary to the ulcerative peritonitis.

From a study of the macroscopic specimen the diagnosis of suppurative oöphoritis and salpingitis alone could be made a feature to be especially emphasized. There were no tubercles upon the peritoneum, and the tubercular process in the ovary presented the more common type of diffuse suppuration without macroscopic tubercles. The difficulty of differentiating between tubercular and non-tubercular salpingitis has been pointed out by Von Franqué.²² The same similarity between the two processes obtains in the ovary, and it is probably owing to this re-

semblance that many tubercular cases that are not examined microscopically are improperly classified.

A case in its important features closely resembling that just described is here briefly summarized. The woman was a patient in the gynecological service of Professor von Franqué. The case presented, upon autopsy, tubercular foci in the pulmonary apices and in the peribronchial lymph nodes. The recto-uterine and utero-vesical pouches were completely shut off from the main abdominal cavity by adhesions. They formed together a suppurating cavity; the two pouches communicating over the left horn of the uterus. The adnexa formed a part of the lateral walls of the abscess cavity, the ovaries being almost entirely replaced by a tubercular tissue. Microscopically, the adnexa of both sides showed typical miliary tubercle containing giant cells and tubercle bacilli. There were perforations into the rectum, sigmoid flexure and urinary bladder. The perforations into the intestine, as in the last case, were secondary to a tubercular peritonitis, and a fetid peritonitis then resulted from the escape of intestinal contents. The perforation into the bladder was due to the secondary peritonitis. No pathological changes except edema of the left half of the organ were present in the wall.

In this case also the diagnosis of suppurative oöphoritis and salpingitis was made at the time of autopsy, and the tubercular nature of the infection was first revealed by the microscopic examination.

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VAGINAL CESAREAN SECTION AS A SUBSTITUTE FOR INDUCTION OF LABOR IN CASES OF THREATENED ECLAMPSIA OR OF BRIGHT'S DISEASE.¹

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INDICATIONS for obstetrical interference in cases of eclamptogenic intoxication are furnished by both maternal and by fetal considerations. Indications dependent on the mother include not only danger of convulsions but also danger from the production of serious organic lesions in the liver, kidneys, brain and heart from the continued action of the morbid factors. It is a difficult problem to determine in a particular case when the indications become sufficiently urgent to justify or demand the interruption of pregnancy. At present the best we can do to judge the severity of the intoxication is to study the symptoms in connection with a review of the general health of the patient and a history of her pregnancy. The chief symptoms to be observed are: albuminuria, presence of kidney casts, edema, headache, nausea and vomiting, dyspnea, deficiency in urea and in urinary secretion and amaurosis. Important points in the anamnesis and phenomena of pregnancy are kidney disease, hydramnion and twin pregnancy and the effects of anti-eclamptic treatment.

To consider very briefly these symptoms and factors it may be asserted that the most important element in making a prognosis is the presence of, the amount of, and persistency of, albuminuria. Very rarely this symptom is lacking until the outbreak of convulsions, and in these cases, of course, it has no prognostic value but when present, as it is in the great majority of cases, it is our best index of the condition. The number of epithelial and granular casts is generally proportionate to the amount of albumin, and

¹Read before the Chicago Gynecological Society, May 20, 1904.

the variations in their number add to the prognostic significance of the variations in the quantity of albumin.

Next to albuminuria in prognostic importance is general edema. This condition is due to cardiac, hepatic and blood disturbances, as well as to kidney lesions, and is not, therefore, always in proportion to albuminuria. It is generally the first sign to attract attention and its frequency and noticeable variations serve the patient as well as the physician as an index of danger. It should never be neglected nor made light of. Dyspnea, when due to an accumulation of fluid in the chest cavity, is closely related to a severe grade of edema. It may, however, be a symptom of intoxication acting, perhaps, through the cardio-vascular system. It is generally of grave prognostic significance. Likewise headache, if of toxic origin, and nausea and vomiting of late pregnancy are among the more serious symptoms and show a considerable degree of intoxication.

E. P. Davis and others have held that a small excretion of urea is a sign of danger from eclampsia and a causative factor. A study of large numbers of clinical analyses of urine has convinced me that a daily elimination of from 10 to 15 gm. of urine is not at all uncommon and attended with no sign of eclamptogenic intoxication. The determination of the cause of a low urea excretion is difficult, as the problem is complicated. I am inclined to believe that it alone, without albuminuria and kidney disease, has little clinical significance in this connection.

Albuminuric retinitis is, of course, a very important complication, but its prognostic value, so far as convulsions are concerned, is perhaps no greater than that of albuminuria without retinitis. In other words, an increase in the amount of retinal injury does not denote a corresponding increase in the danger of the approach of convulsions. An increase in the retinal disturbance is, however, of great importance so far as vision is concerned, and therefore is a very urgent indication for obstetrical interference.

Hydramnion and multiple pregnancy are factors in the causation of eclampsia, and so are of importance in prognosis. More attention should be given to edema and albuminuria when found in connection with twin pregnancy or hydramnion than when occurring in more normal conditions. With much greater emphasis may the same thing be said of complication by an old Bright's disease. In a patient with a chronic kidney lesion the symptoms of threatened eclampsia acquire very serious significance.

With the determination of the presence and severity of the symptoms and condition we must also observe carefully the effects of treatment designed to eliminate the poison and combat its dangers. When this treatment, consisting essentially in free elimination by the skin and bowels, rest in bed and milk diet, does not succeed in lessening the danger as indicated by the danger signals, the symptoms, then the question of obstetrical interference becomes urgent. Its proper answer requires and presupposes a study of symptoms, a well-planned and well-executed management or treatment and a judgment concerning the efficiency of this treatment. This judgment considers not only the danger of the occurrence of convulsions but also the danger of permanent organic injury to the eye, heart, liver or kidney.

The fetus may also furnish indications for interrupting pregnancy. Post-mortem examinations of children born during eclamptic convulsions and dying ante-partum or post-partum, show lesions of the liver, kidney, or brain, somewhat similar to those found in mothers dying of eclampsia. It seems not impossible that a child born four or five weeks before the end of gestation and so much less exposed to the eclamptogenic poison should suffer less from these characteristic lesions, and therefore have a better chance for life. Moreover, a child might be removed more safely at this time than when taken forcibly in a hasty operative delivery during convulsions. While the fetal indications alone will rarely decide the treatment, they may no doubt have some weight as a supplement to the maternal indications.

In cases of chronic Bright's disease the indications for operative delivery are not only those of threatened eclampsia, but likewise concern the pathological condition due to special anatomical changes wrought by this complication. With no apparent symptom of eclampsia, life may be in danger from kidney disease aggravated by pregnancy.

The emptying of the uterus having been decided upon we have to choose between induction of labor and Cesarean section. Just as labor may be the exciting cause of convulsions so the induction of labor may incite them. Moreover, the induction of labor frequently takes a long time, during which the patient is exposed to the danger of the eclamptic poison. These objections to the induction of labor may sometimes cause us to prefer the method of the rapid emptying of the uterus in certain cases. The decision will rest upon the urgency of the maternal indications, comparative value of the fetal indications, upon the prospects of a

rapid termination of an induced labor and upon the presence of the facilities for work and the operative skill of the physician in charge. In cases of hydramnion or twin pregnancy, labor probably can be quickly induced by rupturing the membranes. Hence, rapid delivery by Cesarean section would be less desirable and less necessary. In many other cases I have no doubt that the interests of both mother and child would be helped by choosing the more surgical procedure.

Whether typical abdominal Cesarean section or vaginal section should be preferred depends upon the presence or absence of obstructions to the delivery of the child through the pelvis. In contracted pelvis or tumor in the pelvis or in case of a very large child, of course, the classical section would be chosen. Otherwise the comparatively new operation, recommended by Dührssen in 1897 is, no doubt, to be preferred in these cases.

Some of the points made concerning the indications for the operation, as well as certain things connected with its technic, may be presented better for consideration and discussion by a report of two somewhat typical cases, the first a case of threatened eclampsia with serious amaurosis, and the second one of serious kidney disease.

The first patient, Mrs. M., was delivered artificially of a dead eight-months' child four years ago, after a severe eclamptic seizure. Albumin and casts were found in the urine for about one year. After over two years of good health and after consultation with several well-known physicians concerning her condition, she became again pregnant, the last menstruation appearing July 6th to 8th, 1903. Within a few months albumin appeared in the urine in small amounts, but in the latter part of January the amount increased quite rapidly and some edema appeared. I saw her first, February 3d and found that she was on a modified milk diet and having large free bowel movements. While not constantly in bed she was in the house and lying down a good deal of the time. She had been carefully watched by her husband (a physician) and by Dr. Frank B. Earle, who asked me to see the case. I recommended her to go to the West Side Hospital for more careful treatment and watching. The patient was kept constantly in bed, fed milk exclusively, given one or two warm rectal injections of salt solution and a good sweat daily. For the headache, of which she had complained some before entering the hospital, she received chloral hydrate. Under this treatment the headache improved a little, but the amount of albumin and casts

in the urine continued large, running from .20 to 35 per cent. by volume. The edema of the face likewise continued. February 8th I discovered that vision in the left eye was much impaired. and the next day I found that she could only distinguish fingers with the left eye, while the vision in the right eye was considerably disturbed. February 11th, Dr. Noble gave a pretty gloomy prognosis of the vision and advised immediate emptying of the uterus on account of the eyes.

In accordance with this advice, as well as on account of her general condition, Dr. Earle and I decided to remove the contents of the uterus, although we had hoped to prolong the pregnancy two or three weeks more on account of the child. Dating from menstruation the patient was, on February 12th, the date of the operation, 31 weeks and 3 days advanced in pregnancy. We had to decide between induction of labor by means of bougies or the bag and the rapid emptying of the uterus by vaginal Cesarean section. We decided upon the latter method in order to avoid the danger from a labor which would probably be prolonged twelve to twenty-four hours at least, and to furnish a better chance for the child.

The cervix was found in the condition typical for a multipara at that period, about 4 to 5 cm. long and admitting with dilatation the end of the finger.

Silk sutures were inserted into the sides of the cervix for traction guides and an incision made through the anterior vaginal wall from about 3 cm. below the meatus urinarius to the external os. The bladder was pushed up and the anterior uterine wall split in the middle line to the peritoneal reflection. Vulsellum forceps applied to the edges of the incision were used to pull the uterus down within view and reach. As the incision was extended they were applied higher up to facilitate the making of the incision just as when bisecting the anterior wall of the uterus in the Doyen method of hysterectomy. Following the advice of Dührssen, I also made a longitudinal incision in the vagina posteriorly, and split the posterior lip of the cervix and the posterior uterine wall for a distance of about 4 cm. Then the membranes were ruptured and the child turned and extracted. It was in the apneic state characteristic of a child delivered by a Cesarean section and weighed two pounds and thirteen ounces. It was taken at once to the incubator, already prepared, and well cared for, but lived only about forty hours.

There had been but little bleeding during the operation, and

now there was but little hemorrhage from the region of the placenta, which remained attached to the uterus. The cord was cut short and a large sponge introduced into the uterus to keep the field clear for repairing the incisions in the uterine wall. The incisions in the uterine wall were closed by catgut sutures and the vaginal wall was repaired with a continuous catgut suture. Four stitches were taken in the anterior wall before removing the placenta. Then with some little difficulty the placenta was expressed and the bleeding, which was not severe, was easily checked by a hot douche. More sutures completed the closure of the anterior wall and a continuous suture the vaginal incision. A strand of iodoform gauze made a drain between the vagina and supra-vaginal portion of the cervix.

In reviewing the operation it seems that the anterior incision might have been made a little longer and thus the necessity for the posterior incision might have been avoided. At or near term the posterior incision is necessary for a quick removal of the head without further laceration. I doubt the necessity for the drain and shall omit it in future. A little care in suturing will obliterate dead space between the vagina and the uterus.

The second case was that of a patient about 35 years old, admitted to the hospital in the thirty-fourth week of her fourth pregnancy. She had had one miscarriage, one labor of which we have no satisfactory history, and one labor two years ago, conducted by Dr. Yarros, in the Maternity Dispensary of the College of Physicians and Surgeons. During her last pregnancy she had suffered very much from edema and dyspnea. During the labor she became cyanotic, gasped for breath, and was obliged to sit up in order to breathe at all. By free stimulation with strychnine and brandy she was finally delivered after a short labor. Subsequently large amounts of albumin and many casts were found in the urine.

During the early part of the present pregnancy she appeared once or twice at the dispensary coughing a great deal and showing much disturbance characteristic of renal and cardiac disease. She was a very difficult patient to manage, very suspicious and quite impossible to control. For a time she disappeared from our observation, and later applied to Dr. Van Hoosen, who had formerly operated on her, to repair a severe perineal laceration made at her first confinement. Dr. Van Hoosen took charge of her for a short time and finally referred her to me. Her condition upon entering the ward was pitiable. She had a weak and

rapid pulse, breathed very fast, was considerably cyanotic and coughed incessantly. Her condition did not improve in spite of treatment. Microscopic examination of the sputum showed no tuberculosis bacilli. There were no areas of consolidation in the lungs, but much edema. The urine showed 16 to 24 per cent. of albumin by volume and a large number of casts. She took very little nourishment and obtained but little sleep. One week after her admission her condition had become so serious that we became convinced of the hopelessness of further efforts to improve her condition in any other way than by terminating the pregnancy. Accordingly, in the thirty-fifth or thirty-sixth week of pregnancy, one week after her admission, I decided to empty the uterus by vaginal section. Any attempt to make an internal examination of the very irritable patient brought on paroxysms of coughing and attacks of dyspnea that seemed almost to threaten her life. No attempt to induce labor, even the introduction of a bougie, could have been made without complete anesthesia. To have employed any method of inducing labor that would have required twelve or more hours would have been hazardous in the extreme. A rapid method requiring continued anesthesia for a couple of hours would have been equally dangerous. Hence, there remained but one course, the vaginal section.

After the patient was anesthetized, the cervix was found to be effaced, its os admitting one finger. The head could be easily pressed into the pelvis. I thought it possible to extract the child by simply making deep cervical incisions, and therefore bisected both the anterior and posterior lips up to the vaginal reflection. As these incisions, however, did not give me a sufficiently large opening I extended the anterior incision a short distance into the vaginal wall and about 6 cm. along the supra-vaginal portion of the cervix up to the peritoneal reflection, pushing away the bladder as the incision was made. Then forceps were applied and the child easily extracted. The time required, from the moment the patient was put on a table, including the completion of the preparation, the examination and extraction of the child, was twelve minutes. The placenta was expressed, the wound sutured and the patient removed in less than twenty minutes. Very little chloroform was given and the patient, shortly after the operation, was in a much better condition than before. She breathed more easily, the pulse was much better, the cough disappeared. For several days the improvement continued. The patient took considerable nourishment and obtained much needed sleep. In about:

ten or twelve days the general edema and that of the lungs became worse, the cough returned, and a delirium began which increased until she finally fell into a typical uremic coma and died on the twenty-second day after the operation. At no time was there any fever, and it was evident that death was the result of the kidney affection. The operation had given her a week or more of comparative ease and prolonged her life that length of time.

The child weighed four pounds and four ounces and was 44 cm. long, confirming our diagnosis of the length of pregnancy, which was estimated at thirty-four to thirty-five weeks. It was placed in the incubator and has since done fairly well, being now at the age of about two months, over five and one-half pounds in weight. It is now kept in the incubator only during the day and may be said to be in a fairly safe condition.¹

A review of these cases, taken in connection with a study of the cases reported by Dührssen, Bumm and others, convinces me of the value of vaginal Cesarean section when used for the indications above given. It has, of course, a much larger field than this. After the occurrence of convulsions, when the cervix is not yet in a condition to be rapidly dilated, it is the safest method of treatment of eclampsia, if proper facilities for the operation are at hand. Possibly in any case where Cesarean section is required for any other indication than that of contracted pelvis or disproportion between the size of the passage and the passenger, the vaginal section will replace the abdominal operation. It has many advantages. Unless it is followed by hysterectomy in cases of cancer of the uterus the peritoneal cavity is not opened. All the dangers of peritoneal contamination are avoided, as well as the disadvantages of peritoneal adhesions. The incision does not reach the placental site and thus much hemorrhage is avoided. There need be, in many cases, no haste in removing the placenta and hence there is much less hemorrhage than from abdominal Cesarean section from this cause. The scar in the uterus is probably in a less dangerous location than in case of abdominal Cesarean section. The avoidance of a scar and the frequent resulting weakness in the abdominal wall is certainly a great advantage. And finally it will often be an advantage to employ the vaginal route because it will be easier to secure the consent of the patient to the operation.

These advantages that the vaginal operation possesses over the

¹The child left the hospital three months later, weighing about 10 pounds and in a perfectly satisfactory condition.

abdominal makes it a valuable addition to our obstetrical resources. This is shown by the increase in the field of the indications for the operation. We should hardly have considered abdominal section in either of the cases reported above. As a substitute for the induction of labor for the indications mentioned, and in allied cases, the vaginal Cesarean section has a special place. To define this place requires a reasonably reliable prognosis which can be obtained only by a careful study, in case of threatened eclampsia, of the symptoms of eclamptogenic toxemia of pregnancy and in Bright's disease complicating pregnancy, of the symptoms of uremia or of other sequelæ of lesions resulting from kidney disturbances.

A CASE OF MALFORMATION OF THE INTERNAL GENITALS WITH THE REPRODUCTIVE GLANDS IN THE LABIA MAJORA.¹

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CONGENITAL deformities of the internal genitalia, while not uncommon, are sufficiently rare to make each case interesting both to the specialist and to the general practitioner. By far the greatest number of gross deformities of these organs may be classified under some division of hermaphroditism, or pseudo-hermaphroditism, but there are cases in which the external genitalia are so perfectly formed and in which the internal organs vary so markedly from the normal that one is unable to determine the sex of the individual without microscopic examination of the reproductive gland.

Through the kindness of Dr. Reuben Peterson, I am enabled to report the following case, which entered the gynecologic service of the Hospital of the University of Michigan.

Patient is 15 years of age and enters the hospital for pain in the lower abdomen and inguinal region and for a failure of the menses to appear. The father is living and is in good health, but the mother has had fainting spells with the menstrual flow since

¹Read before the Section of Gynecology and Obstetrics of the Michigan State Medical Society, May 26th, 1904.

puberty. One sister died of tuberculosis, but the remaining brothers and sisters are in good health. None of the sisters gives a history of abnormal menstruation and one sister has had two children.

The patient was well until she was 13 years old, when she began to have headache and pain low down in the abdomen. She has had scarlet fever and measles, but made good recovery from each.

Menstruation has never appeared. She had a slight discharge in January, 1904, white and thick, which she thought was leucorrhea. The appetite is not good, digestion is poor, bowels are constipated and bladder negative.

In January, 1903, the patient began to have pain in the lower abdomen and a little to the right of the median line. This pain came on at irregular intervals. It was cramping in character and located in the region of the umbilicus, lasting one and one-half to two days. The pain each month was of the same severity until December, 1903, and occurred about the twentieth of each month. She was not confined to bed during these attacks but complained of dull headache and tired feeling. Since December, 1903, the pain has been almost constant with intervals, sometimes, of two or three days. It extends farther down in the pelvis and to the right of the median line. In the last part of January, 1904, the patient noticed a mass in the right inguinal region, hard and slightly painful on pressure. A week later she noticed a similar mass in the left side. No history of injury could be obtained. These masses would disappear for a few days at a time and then reappear. There has been no evidence of vicarious menstruation.

Physical examination shows the patient to be 5 feet 2 inches in height, and weight 90 pounds. She has lost 14 pounds in the last six months. She does not look well. There is a slight flush about the cheeks, the mucous membranes are pale, and the cheeks are slightly sunken. The sclera is clear and shows a bluish tinge. The hair is brown, of fine texture and long. The face is distinctly feminine. The frame is small and the skin moist, elastic and sallow. Panniculus is thin, musculature small but firm. The dental arch is high and the teeth poorly kept, though regularly set in upper and lower jaws. The skull is square and the brow protrudes. There is a slight asymmetry in the development of the ears. Mental development is good. The voice is feminine.

Chest.—This is narrow and long, but not deep. The clavicles and ribs are prominent. The epigastric angle is narrow. The

breasts are well developed, the areola distinct and nipples elevated. Percussion and auscultation show suspicious signs of tuberculosis, although the sputum examination is negative. The heart is negative.

Abdomen.—Above the level of the ribs, and the umbilicus protrudes slightly. The veins are enlarged in each iliac region. There is tympany all over the abdomen except in the lower left quadrant, where it is somewhat dull. There is tenderness upon palpation and percussion. The abdominal muscles are rigid.

External Genitals.—The pubic hair is present. The mons veneris, clitoris, meatus urinarius, labia majora and labia minora are absolutely normal for a girl who has not reached puberty. The hymen is ruptured and the finger can be passed into the vagina. Ether was given to render the examination more complete. Upon straining under the anesthetic two masses appear, one in the upper part of each labium majus. Each is about the size of a small English walnut, soft and compressible, but distinctly outlined as one body. These bodies can be readily moved and slip under the finger like normal ovaries. Attached to the upper portion of each body is a round, soft, slippery cord, three to four millimeters in diameter. The right external ring admits the forefinger with ease and the left ring is somewhat larger. There is no cremasteric reflex.

Rectal examination shows two tightly stretched bands from either side of the sacrum which meet behind the pubes. There is an apparent absence of the uterus. Examination with the sound in the bladder and the finger in the rectum, shows that there is no body that might be taken for a uterus. In the region of the sigmoid are irregular masses feeling decidedly like enlarged glands and adhesions. No ovaries or tubes could be made out. The vagina admits the forefinger and is 5 centimeters in length. It is lined by mucous membrane and terminates in a cul-de-sac. There is no suspicion of a cervix.

The morning temperature varied from 98° to 98.8° and the evening temperature from 99.2° to 100° during her stay in the hospital.

The diagnosis of tuberculosis of the lungs, tuberculous peritonitis and either pseudo-hermaphroditismus masculinus externus, of bilateral inguinal hernia of the ovaries with anaplasia of the uterus was made. An operation was advised but unfortunately was refused.

The term hermaphroditismus is applied to a class of deformities

in which persist certain elements of the genital organs of both sexes. A large proportion of the congenital deformities of the genital tract are included under this term.

According to the classification given in Ziegler's Pathology, hermaphroditism may be divided into true hermaphroditism and false, spurious or pseudo-hermaphroditism.

True hermaphroditism or *hermaphroditism verus* may be of three kinds: lateral, bilateral or unilateral.

In *lateral hermaphroditism* there is present an ovary on one side of the body and a testicle on the opposite side. It is claimed that individuals of this kind have been known and such cases have been reported by Meyer, Schmorl, Banon and others. Obolonsky has shown by careful dissections and histologic examination that he had a case of this kind.

Bilateral hermaphroditism verus may be defined as the presence of both an ovary and a testicle on both sides of the body. It is doubtful if any such condition has ever been found. Heppner describes such a case in a premature, malformed infant whose external organs were those of a female. The internal organs consisted of a rudimentary uterus, rudimentary vagina, normal ovaries and tubes. Near each ovary was found a body containing tubules radiating toward a hilum. He supposed these to be testicles. Garré has recently reported a case which may belong to this class.

In *unilateral hermaphroditism verus* there are a testicle and ovary on one side of the pelvis and either a testicle or an ovary on the opposite side. Blacker and Lawrence have found such a condition in a fetus.

Pseudo-hermaphroditism is much more common than hermaphroditism verus. It is the result of the persistence of some of the embryonic structures, which have failed to undergo atrophy as in the normal individual. It is characterized by bisexual development of the external genitals and genital passages, with a unisexual development of the essential sexual gland.

Pseudo-hermaphroditism may be either masculine or feminine and of the internal, external or complete variety.

In *pseudo-hermaphroditism masculinus internus* the external genitals are either well developed or deformed and are of the male type. The individual also possesses a vagina, and, in some cases, a uterus or even tubes. The sexual glands are testicles.

In *pseudo-hermaphroditism masculinus externus* the external

genitals, only, depart from the male type and more or less completely resemble the female.

Pseudo-hermaphroditismus masculinus completus is characterized by having a vagina, uterus, and tubes more or less complete or in a rudimentary state. The external genitals resemble the female organs. The penis is usually in a condition of marked hypospadias and the urethra and vagina open by a common orifice. Other varieties of this type are seen. The sexual gland is testicle.

In *pseudo-hermaphroditismus femininis internus* the external organs are female, and, together with the ordinary internal organs of the female are found rudiments of the Wolffian ducts.

Pseudo-hermaphroditismus femininis externus has external genitals more or less resembling a male, while the sexual gland is ovary.

Pseudo-hermaphroditismus femininis completus has external organs resembling the male, a persistence of parts of the Wolffian body, and the sexual organ is an ovary.

The case reported, provided the glands in the inguinal canals are testicles, is one of *pseudo-hermaphroditismus masculinus externus*. The formation of the external genitals varies markedly in this class. By far the greatest number are cases of hypospadias, in which the clitoris is abnormally developed. The urethra is represented by a groove on its under surface. The clitoris may attain the size of the normal penis. Hundreds of cases of this kind have been reported. Next in frequency are those cases in which the external genitals conform exactly to the female type, but the vagina and hymen are totally absent. Much more rare are those cases in which the hymen and vagina are present and the external genitals are apparently those of a normal individual.

Mundé, in his article in the *AMERICAN JOURNAL OF OBSTETRICS* for March, 1899, was able to collect only five cases of this last class. These were reported by Leopold, Ricco, Steglehener, Giraud and Chambers. I am able to add to this list cases by Braun, Dixon Jones, A. Martin, Poore, C. Martin, Snequirjow, Solowij, Delagénrière, Buchanan, Polaillon, Harris and Demars. In all these cases the external genitals were female,—the clitoris was not enlarged, the meatus was in normal position and the hymen and vagina were present. The uterus, tubes and ovaries were absent and the glands in the inguinal canal were proved to be testicles by microscopic examination.

The case reported by Polaillon in 1885 may be taken as a type

of the above cases. The patient was 25 years of age. She has never menstruated and has never had any menstrual molimina. The external genitals are well formed and are like those of a normal female. The clitoris is not enlarged and the meatus is in normal position. The vagina is 2 centimeters in length. Rectal examination with the sound in the bladder shows an entire absence of the uterus. At either external abdominal ring is an oval body, movable and incompletely reducible on the right side, while it is completely reducible on the left. These glands were supposed to be ovaries. The patient died from nephritis in 1887. At autopsy the uterus was found to be absent and was replaced by a thin band of muscle back of the bladder. No tubes or ovaries were present. The glands in the inguinal canal were proven to be testicles by histologic examination. .

The earliest authentic cases of ovarian hernia were reported by de Gouey (1716), Pott (1756), Deault and Deneaux. Since then many articles and monographs have been written on this subject. In the *Annales de Gynécologie* for 1879, Peuch has collected 86 cases of inguinal ovarian hernia. Of these, 54 were congenital, 16 were accidental and 16 were questionable. Of the 54 congenital cases, there was deformity of the internal generative organs 33 times. In 4 cases there was a bihorned uterus, in 13 feminine hermaphrodismus, and in 16 absence of gross defect in the development of the uterus. Double ovarian hernia was congenital in nearly every case and was associated with absence of the uterus or feminine hermaphrodismus. The ovary was always found with the tube in congenital cases, while it was found alone in cases of acquired hernia. He says, "It is rare to mistake an ovary for a testicle in the inguinal canal, because if the external genitals are well formed the gland is probably ovary. With testicles in the canal there is usually some deformity of the external genitals, especially the clitoris."

This conclusion differs markedly from Swasey, who says, "It is far more probable that congenital tumors of the groin are testicles than ovaries, and no case should be accepted as ovaries unless the evidence on the point sets it beyond cavil."

Congenital hernia of the ovary is analagous to the normal descent of the testicle. The round ligament is the essential agent. Normally, the Müllerian ducts fuse to form the uterus. The canal of Nuck remains patent until the seventh or eighth month of fetal life. The ovary descends from its place of development as does the testicle, but the anlage of the round ligament of the

ovary fuses with the uterus to form the ovarian ligament. This arrests the ovary in its descent and the gland is drawn toward the uterus, away from the inguinal canal. In the testicle the anlage of the gubernaculum testes is attached to the skin, making its exit from the abdominal cavity by way of the inguinal canal. The body grows more rapidly than the gubernaculum and consequently the testicle descends in the abdomen and is drawn through the inguinal canal and finally into the scrotum. If Müller's ducts fail to fuse, no uterus is developed and consequently the anlage of the round ligament has no fusion and no place of attachment other than the normal attachment of the gubernaculum testes. The ovary descends and is drawn through the internal ring before the canal of Nuck closes and a congenital hernia is produced.

I have been able to collect nine cases of double ovarian inguinal hernia with apparent or total absence of the uterus. In each case the external genitalia were those of the normal female. The vagina and hymen were present. These cases were reported by Guerisan, Nicaise, Holmes, Conte, Rheinstaedter, Boinet, Bezançon, Werth, Parker, and Cazeaux. Other cases are mentioned in literature, but they either exhibited some deformity of the external genitalia or the cases referred to could not be found.

The case reported by Bezançon may be taken as a type of these cases. The patient was 38 years of age. There was a family history of tuberculosis. The patient is married but has never menstruated. Coitus is normal. She shows evidence of cachexia and advanced pulmonary tuberculosis. She died after three days of observation.

At autopsy distinct lesions of pulmonary tuberculosis were found. There was an absence of the left kidney and evidence of tuberculous peritonitis. The vulva and clitoris were normal. The meatus was in normal position for a female. The vagina was 4 centimeters long and terminated in a cul-de-sac. Hymen tags were present. There was a small bundle of muscle fibers back of the bladder supposed to be the remains of the uterus. There was an inguinal hernia containing some of these fibers, an ovary and a tube. Microscopic examination of the sexual gland shows Graafian follicles. There is a sclerosis of the right ovary.

The following is a case reported by Swasey in which no microscopic examination was made. The patient is 46 years of age and single. There is nothing in feature, form, or face to suggest that she is not a woman. There is no beard, the skin is soft, the

complexion fair and the voice feminine. She has never menstruated and there has been no vaginal discharge. She has never had any pelvic pain. The breasts are normal and of the female type. The nipples are perfectly formed and the shoulders and chest are female. She was ruptured at 25, a double inguinal hernia being produced. Below the hernial masses are irregular bodies, one on the right and one on the left, the size of pigeon's eggs. They have the feel and consistency of five-year-old testes. There is a cord from each body to the external abdominal ring, feeling like a spermatic cord. The tumors are irreducible, have never been painful and have always occupied their present position. The pelvis and thighs are of the female type. The mons veneris is not prominent but pubic hair is present. The vagina is 3 inches long and is perfectly formed. The hymen is perfect; the clitoris normal. There is no trace of a normal uterus. The patient is of female build. This case was seen by Paul F. Mundé and T. Gaylord Thomas. Mundé considered the glands testicles, while Thomas was equally sure that they were ovaries. No operation was performed.

From the cases collected I think that one is not justified in making a diagnosis of either ovarian hernia or hermaphroditism until the gland has been examined microscopically. I have collected 24 cases showing practically the same condition upon physical examination,—feminine habitus, feminine external genitalia and glands in the inguinal canal. Of these 24 cases 9 proved to be ovarian hernia and 15 pseudo-hermaphroditism masculinus externus.

I think, in making our diagnosis, we must agree with Robert Barnes, who says that cases of this class of pseudo-hermaphroditism and ovarian hernia are closely related and that such individuals should be called "neuters" of "missed sexual determination."

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SUPPURATING CYST OF LEFT OVARY DURING PREGNANCY;
MISCARRIAGE, LAPAROTOMY, DEATH.

BY

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INFECTION of ovarian cystomata during pregnancy is of interest and for this reason the following case is reported:

Mrs. J., æt. 29 years, was seen for the first time on April 7, 1903, when the following history was obtained: Menstruation began at the age of fourteen and was always regular, but there was rather sharp pain in the left iliac fossa accompanying it. Patient had always been in excellent health. Married at the age of twenty-four she had given birth to two healthy children at term, the labors having been uncomplicated. The last child was born two years ago. No miscarriages.

When we first saw the patient she had been in bed for three weeks on account of severe pain in the left iliac fossa. This pain had commenced about three months previously and the menses had been absent for four months. Patient says that the abdomen has been enlarging and that she is pregnant.

The patient has become thin and has lost much strength. Diarrhea persistent, and for the past week has vomited both solids and liquids.

Examination showed a large distended abdomen with a well-developed collateral circulation. By palpation one feels a fluctuating tumor extending up from the pelvis to within four fingers' breadth of the umbilicus and occupying the left side of the abdomen. Percussion dullness exists over the entire tumor. Per vaginam the fluctuating tumor can be made out in the posterior cul-de-sac. Cervix enlarged and softened; corpus uteri lying to right and three fingers' breadth above the pubis distinct from the tumor. Diagnosis: pregnancy and ovarian cyst. Temperature 100°, pulse 97, respiration 21.

Abdominal section was advised but refused by the family. We did not see the patient for ten days, when we were hurriedly summoned, only to find that a miscarriage had taken place two days previously, that the vomiting had not ceased, and that on the evening before the patient had had a severe chill, followed by a

rise in temperature to $103\frac{8}{10}^{\circ}$. She was evidently very septic, and operation was offered as the only hope of saving her, although the prognosis given was far from brilliant.

At 4 P.M. the abdomen was opened, giving exit to a large amount of purulent yellow fluid. The intestines were agglutinated by rather old adhesions. The cyst occupied about the entire left half of the abdominal cavity and was generally adherent. It contained about 3 litres of pus and was unilocular. The uterus was about the size of a closed fist. The cyst was rapidly peeled out and the pedicle ligated with celluloid thread. Two large drainage tubes were inserted after the abdominal cavity had been thoroughly irrigated with salt solution and the incision closed.

The patient did not recover from the ether and died five hours later.

Cover-slip examination of the pus from the cyst showed abundant chains of streptococcus.

871 BEACON STREET.

A RARE FORM OF VAGINAL CYST.¹

BY

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(With four illustrations.)

THE following case is reported because of its comparative rarity, and especially because of the difficulty in determining the exact etiology:

Mrs. A. H., age 31, housewife, married five and a half years, presented herself at the Rush Medical College Gynecological Clinic, Dec. 11, 1901, complaining of continuous headache, especially aggravated just before menstruation, of irregular menstruation, and some abnormal swelling in the vagina.

Her first symptoms began about three and a half years before, at which time, seven months after her first labor, she noticed a slight bulging from the vagina. It has slowly increased in size since first observed. Menstruation began in her four-

¹Read at a joint meeting of the Chicago Medical and Chicago Gynecological Societies, June 23, 1904.

teenth year, was regular, of the 30-day type, and lasted usually from 5 to 6 days until about two years before 1901, since which time it has been irregular. Dysmenorrhea has been present for about the same length of time as the irregularity, and is especially marked just before the flow, but the pain continues moderately through the greater part of the month. She has had two full-time pregnancies; no abortions or premature labors. The first child, born in 1898, was delivered with forceps. The second labor, two years later, was normal. The patient complains of som costiveness, but no other functional disorder. There are no symptoms referable to the bladder, nor have there been at any previous time.

Upon examination the uterus was found to be somewhat enlarged, slightly retroposed, the cervix drawn to the left, with some thickening in the left broad ligament. Projecting from the vulva was a swelling of about the size of a hen's egg, which had the appearance of a cystocele. It was of a rather soft fluctuating consistency and rather thick walled. The swelling started from the anterior fornix, just in front of the cervix, and there was bulging of the upper part when the patient coughed. It had never given her much discomfort or pain. She claimed that her mother had had a similar swelling which had disappeared spontaneously. An operation was advised, but she could not arrange to go into the hospital at that time.

She was admitted to the Presbyterian Hospital for operation about the middle of March, 1902. She stated upon admittance that early in January the vaginal swelling had broken and that several ounces of a whitish glairy mucus had escaped. Since rupture there had been a constant discharge which was more profuse at times.

Examination at this time showed a large swelling in the anterior wall of the vagina, situated mainly to the right of the median line, and when distended of about the size of a hen's egg. There was a small opening above the cervix from which a glairy mucous discharge escaped. The inner wall of the sac seemed somewhat rugosed.

At the operation, performed by Dr. Webster, pieces of the entire thickness of the cyst wall, from near the cervix, were removed for microscopical examination. The remaining portion of the cyst wall was dissected off and the wound closed as in an ordinary colporrhaphy. The abdomen was then opened, the cystic and cirrhotic left ovary removed, and a suspensio-uteri done.

No abnormality of the uterus was noted. Recovery was uneventful and she left the hospital about three weeks later, since which time she has not been seen.

The pieces of the cyst wall removed for examination measure from 5 to 7 mm. in thickness. A microscopical examination of sections shows the following features from without inwards:

1. Vaginal epithelial layer. The outer surface is smooth and



Fig. 1.—Section of cyst wall.

presents none of the irregularities or folds found in the normal unstretched vaginal wall. The inner surface is broken by the many papillæ found normally. Undoubtedly a portion of this layer is cervical epithelium, but there is no line of differentiation between the two.

2. The submucous, or subepithelial, layer. This consists of a vascular fibro-elastic connective tissue structure which sends processes up into the epithelial layer, forming the papillæ. The

layer is more compact and somewhat thinner than normal, due to pressure and stretching of the wall by the cyst contents. The blood-vessels and capillaries are dilated and full of blood, and the wall of the larger vessels is thickened. There are some areas of small round cell infiltration.

3. Muscle layer. This consists of a dense connective tissue stroma containing a large number of bundles of smooth muscle fibres cut transversely and longitudinally. Those cut transversely are most numerous, and lie next to the subepithelial layer. Most of the larger blood-vessels, with thickened walls, and containing a large number of leucocytes, are found in this layer. The bundles of fibres cut longitudinally lie on the side towards the inner cyst wall and are not present in any large numbers. The increased number of muscle bundles at the ends of the specimens is undoubtedly due to cervical tissue being present.

4. A network of highly vascular fibro-elastic connective tissue which separates the muscle layer from the inner cyst wall. Its thickness varies on account of irregular infoldings of the cyst wall being very thin in places. It is, on an average, about one-half the thickness of the subepithelial layer. In this layer, at one end of the specimens, cross and oblique sections of characteristic cervical glands are seen, while at about the middle of some of the sections, and more closely related to the cyst wall, sections are seen of glandular structures which resemble cervical glands very closely, but which cannot be directly associated with them.

5. The lining cyst wall. This is of a mixed nature and made up of high cylindrical and flat squamous epithelial cells. Where the cylindrical cells are present the surface is irregular, appearing rugosed, and containing depressings or infoldings which look like glands. (See Fig. 4.) This is more marked in places, and it is at such points that sections are seen of gland structures which have been previously described as simulating cervical glands, lying within the adjoining connective tissue layer. These gland structures or glands open upon the cyst wall, and hence lead to the supposition, at least, that the other infoldings of the wall are more of a glandular nature than simply depressions or foldings of the wall. The cylindrical cells vary in height, being very high and slender at places, at other points being more columnar. In places they are arranged in several layers, the outer cells becoming transformed into squamous cells. We have thus formed areas of the cyst wall covered with squamous cells mixed with other areas covered by columnar or cylindrical cells.

At those points where the squamous cell covers the wall the line between the cells and the underlying connective tissue is not broken by the irregular depressions or foldings found elsewhere. (See Fig. 2.)

Some of the sections show where the characteristic cervical glands found in one end of the specimen open upon the inner cyst wall. This fact strengthens the view that the gland structures found at other points of the specimen are closely related to the cervical glands. (See Fig. 3.)

Vaginal cysts may have their origin from several sources. Most frequently they are met with in the anterior wall and lying

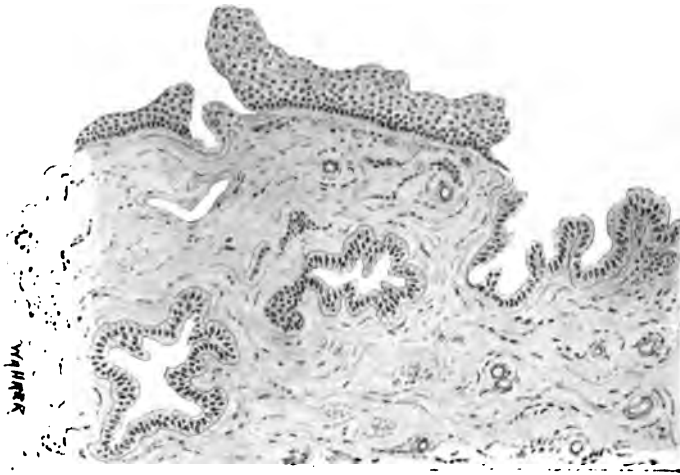


Fig. 2.—Internal lining of cyst wall.

to one side of the median line ; occasionally, however, they may be found in the posterior wall.

Thin walled cysts, usually of small size, are found lying beneath the mucous surface of the vagina, and which have their cause, probably, in distended lymph spaces. They have no epithelial lining. This condition is rare and when present is usually associated with a colpitis emphysematosis. Primarily filled with gas the spaces may later become filled with fluid.

The origin of some cysts is attributed to a growing or cementing together of two neighboring mucous folds of the vagina. Through collection of a serous fluid it produces a cystic dilatation of the small enclosed space. If this condition follows a colpitis

in an adult the spaces are lined with flat or squamous epithelial cells, but if occurring in very early or embryonal life we may find a cylindrical or perhaps both cylindrical and squamous celled lining. If infection is present the original cell lining may be destroyed by the pus.

Another given cause is the occlusion of the duct of a vaginal gland, leading to the formation of a retention cyst. The presence of vaginal glands was first described by v. Preuschen, and has since been confirmed by others. To this origin may be at-

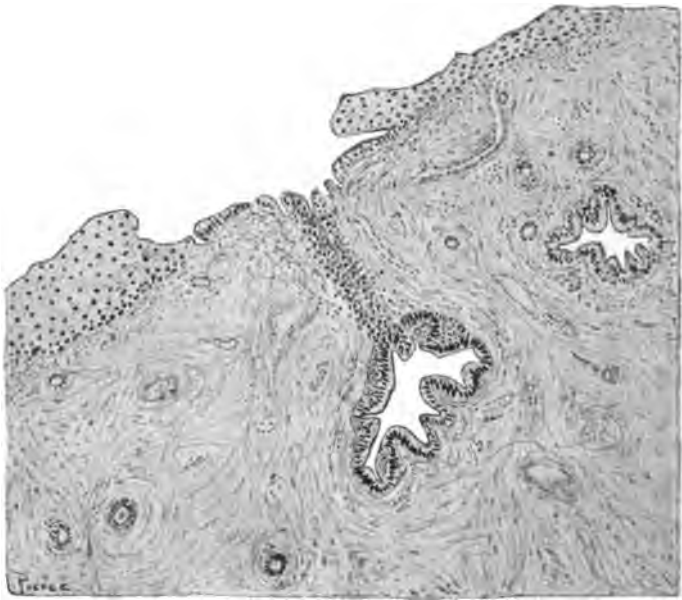


Fig. 3.—Cervical gland opening upon inner wall of cyst.

tributed those cysts which, not being found in the anterior or lateral walls, are lined with cylindrical epithelium, and especially those which besides having a single layer of cylindrical cells have also a multiple layer of cylindrical and flat cells. These cysts may extend into the paravaginal connective tissue, but are usually small and not covered externally with bundles of muscle fibres. A few muscle fibres are occasionally seen if the cyst is large and involves a considerable amount of the surrounding vaginal tissue.

Geyl has reported a case which he considers as proof of the in its wall.

views held concerning the origin of cysts from this source. Two cysts were found in the case mentioned; one, about the size of a hen's egg, was removed from the right postero-lateral wall, and another, much smaller, was symmetrically located in the left postero-lateral wall. Their structure was the same. From a microscopical examination, made by Van Heukelom, Geyl concluded they were derived from pre-formed vaginal glands. There was no muscle layer between the vaginal and cyst walls.

Most of the cysts found in the anterior wall or to one side of the median line probably have their origin in the remains of the Wolffian or the Müllerian ducts. Their development from the former has been well established, but their origin from the Müllerian duct has not been so definitely proven.

While making investigations concerning the lymph vessels and spaces of the female genitalia, Gärtner accidentally came across some ducts during the dissection, and working them out he traced their connection with the remains of the Wolffian ducts. These ducts were found in the lower and anterior portion of the uterine wall. Thus the name, Gärtner's duct, was derived.

The earliest views held by anatomists concerning the Wolffian ducts were that they terminated by two minute openings in the vagina near the meatus. Later investigations disprove this.

Bland Sutton, in 1886, in investigations on the generative organs of cows, was led to the examination of cysts of the broad ligament and upper part of the vagina. His examinations covered 70 specimens. The Wolffian ducts were traced from the transverse tubules in the broad ligaments to the uterus and down the ventral surface of the uterus; the lumen of the ducts gradually becoming obliterated in the tissue of the cervix. Exceptionally they opened on the mucous surface of the vagina about midway between the external os and the meatus. Persistent portions of the ducts dilate, especially in the neighborhood of the cervix and upper part of the vagina. From his investigations he claimed that Skene's tubes represent in the female the vesiculæ seminales in the male.

W. Nagel, in 1895, claimed that Skene's ducts were derived from the mucous membrane of the urethra, and that the Gärtner's ducts did not descend lower than the cervix or upper part of the vagina.

Dohrn, from his investigations, reached the following conclusions: (1) Gärtner's ducts persist exceptionally in the human embryo into the second half of embryonal development, but where

found they cannot be traced continuously in their whole length; (2) the right duct persists longer than the left on account of more pressure being exerted upon the left; (3) in the vagina the duct is found in the concentric tissue layer. Further towards the meatus traces become less and finally disappear, the disappearance being due to embryonal growth and accompanying rarefying and stretching of the urethro-vaginal septum.

G. Klein diagnosed a cyst as being derived from Gärtner's duct from the structure of the cyst wall, it consisting from within outwards of: (1) one to two layers of short cylindrical cells; (2) a thin, firm connective tissue; (3) muscle layer, which belongs to the duct and surrounds it in the vagina.

Muscatello described a case where two layers of muscle fibres, a circular and longitudinal, were present.

Among the more recent investigations concerning the Wolffian and Müllerian ducts, those of Berry Hart are interesting. From the examination of a series of early human embryos he comes to the conclusion that the Wolffian body is epiblastic in origin and that the ducts extend downward to, and open into, the urogenital sinus of a 6-7 weeks' embryo. The lower ends of the ducts, through proliferation of their lining cells, become continuous with a mass of epithelial cells which he calls Wolffian bulbs, at the site of the future hymen. Just above and behind, the Müllerian ducts end blindly in the so-called Müllerian eminence. As development proceeds there is a central cell disintegration, a lumen is formed in the future hymen, and a spreading of the cells takes place and covers the fused Müllerian ducts with squamous epithelium. Arguing thus, he points out that the hymen and lower third of the vagina are derived from the Wolffian ducts, while the upper two-thirds of the vagina is Müllerian, but covered with cells from the Wolffian ducts. Skene's ducts, he says, are analogous to the prostatic ducts in the male, and are derived as outgrowths from the upper part of the urogenital sinus. In the adult he found the Wolffian ducts represented normally near the epoorphoron and rarely by occasional traces in the broad ligament and uterus. While the lower segment of the vaginal portion of the duct forms the hymen, the remaining vaginal portion disappears.

These views met with a sharp criticism by Webster, who held it an assumption to say that the ducts were of epiblastic origin on the ground that, both in vertebrata and invertebrata, most researches have established their origin from the mesoblastic layer

of the somatopleure, their epithelium being derived from the layer of cells lining the cœlum. The duct resembles exactly the surrounding mesoblastic tissue with which it is usually related. The early Wolffian duct is lined by a single layer of cylindrical epithelium, and this is found in remains of the duct found in the broad ligaments of adults. Concerning the changes in the lower ends of the Wolffian ducts Webster was inclined to agree with Nagel, who, in 1896, described the bulbous condition as single and derived from the lower end of the blended Müllerian ducts. The two bulbs found in Hart's case may have been due to late blending of the Müllerian ducts.

According to Nagel, in an 8-13 mm. embryo the Wolffian ducts open into the allantoic duct, which below the points of entrance is known as the urogenital sinus. The ureters are seen opening into the Wolffian ducts near the allantois. In a little older embryo he found the ureters had become entirely separated from the ducts and opened into the allantois independently. From then on the bladder develops, and with the beginning development of the vagina the Wolffian ducts shrink and gradually disappear so that thereafter remnants are not found below the junction of the uterus and vagina. He considers there can be no persistence of the lower ends close to the meatus on account of changes which the tissues undergo in the development of the vagina and other organs.

Conitzer described a small vaginal cyst whose origin was traced to a supernumerary ureter which opened into the vaginal tissues, and Dr. Florence Boyd has more recently described a cyst which was connected with a tube which ran almost directly upward into the right hypochondrium, in the direction of the right kidney. The end of this tube could not be reached with the longest sound, and it is not unlikely that it was similar in origin to Conitzer's case.

It is not unlikely that the condition of double ureter may have been described, at times, as persistent Wolffian duct. The question remains open if that portion of the Wolffian duct below where the ureter is developed may not in rare cases remain patulous and in connection with the ureter, thus giving the appearance of a double ureter.

Vaginal cysts as a rule produce no symptoms, unless they are large or unless rupture occurs. The smaller ones are more frequently only discovered by examination. In those cases where symptoms of catarrhal inflammation are present the inflammation

is usually due to some other cause than the cyst itself. Where rupture occurs there is an escape of fluid varying in consistency from a mucous nature to a clear serum, depending upon the kind of cyst present. Where mucus is discharged, the secretion usually persists.

The small, thin-walled cysts are readily diagnosed by the examining finger, though not infrequently they are overlooked. The finger comes upon a particularly soft spot which feels like a hole in the vaginal wall. By inspection the cyst wall appears more bluish or whitish than the surrounding normal membrane.

As to the other forms of vaginal cysts, it has been pretty generally accepted that those having an epithelial cell lining wall are derived from one of three sources, namely, vaginal glands, Müllerian ducts, or Gärtner's ducts.

The presence of vaginal glands has not been generally agreed to by the profession and it is doubtful if cysts can have their origin from such a source. Granting their presence, however, the history of my case and the microscopical findings can exclude such an origin in this case, and for the following reasons: (1) it lies outside of the muscular layer of the vaginal wall; (2) there is no communication or relationship between the inner cyst wall and the vaginal surface, except as produced by the spontaneous rupture; (3) its location; (4) its size.

I should mention at this point that Dr. E. R. LeCount, to whom I showed one of the sections, suggested a possible diverticulum of the bladder. While it is, of course, possible that a bladder diverticulum may occur and very closely resemble a cyst of the Wolffian duct, I would exclude any probability of such origin in this case on the grounds that a bladder disturbance of any sort was never complained of by the patient either before or after the operation; in dissecting off the cyst wall no relationship to the bladder was found; it lay in close relationship to the anterior surface of the cervix. While a cystoscopic examination might have shed some light on the origin, none was made in the case as there was nothing in the history to suggest any association or trouble with the bladder.

The diagnosis in this case rests, I believe, upon an origin from either the Müllerian or Wolffian tract.

If it were derived from the Müllerian tract we would expect to find some anomalous development of the genital organs present. The usual anomaly met with is a failure of the embryonal ducts to become properly fused, so as to form the normal uterus and

vagina. This may be found only at the fundus of the uterus, as is more usual, or it may extend downward so as to form the double uterus and double vagina. The latter form is rare, and much more rare is the occurrence of a normal uterus with an anomalous development of the vagina. There have been reported a few cases of single uterus with double vagina.

According to early views, those portions of the Müllerian ducts from which the uterus and vagina are developed first united at about their middle point, and then the fusion extended downward and upward until normal development of the organs was reached. From such views it could be easily explained how through failure of union in both directions a uterus bicornis or subseptus with single cervix and double vagina might arise, or, simply by failure of fusion from below, a double vagina with single uterus. (Kolliker.) Dohrn's investigations led him to believe that fusion took place from above downwards, the process being completed about the latter half of the second month. Thiersch believed that fusion first occurred below, and then extended upward.

Nagel has shown that, in the Müllerian ducts, only the upper or proximal ends are patulous, while the lower ends are solid and made up of a mass of large protoplasmic cells. The portions of the ducts which form the uterus and vagina first lie very close to each other and soon fuse, the upper portion forming the uterus, while the lower or solid portions grow downwards to the sinus urogenitalis in such close contact with each other that no division between them can be made out. Later a lumen is formed within the mass of cells which becomes the vagina. Fusion, according to Nagel, occurs at about the same time over the whole extent, or may occur at several points at the same time.

It is possible that in the early development of the embryo the ducts may not be in close apposition with each other but separated by a layer of connective tissue, in which case fusion may not occur. This would happen more easily where they were separated in their whole extent, the solid portions remaining apart in their growth downward, and thus forming a double uterus and double vagina, but it may occur only in the lower portion and thus a single uterus with double vagina be developed.

In my case the uterus to all appearances, and judging from former pregnancies, was normal, and so far as could be made out the lower portion, at least, of the vagina was normal; it is not impossible, however, that some such anomalous development as mentioned may have been present at the junction of the cervix

and vagina, a portion of the original mass of cells having been cut off from the general mass of cells and finally caused the development of the cyst found in this case.

Marchand has very recently described a cyst (2.5 x 1.5 cm.) found in the left antero-lateral fornix just at the junction of the cervix and vagina, which was filled with a viscous, colorless mucus and lined by a single layer of low epithelial cells, and whose wall was like the normal vaginal wall. Its origin he attributes to a possible cutting off of a part of the lateral epithelial proliferation which limits the vaginal vault from the portio vaginalis in the early embryo.

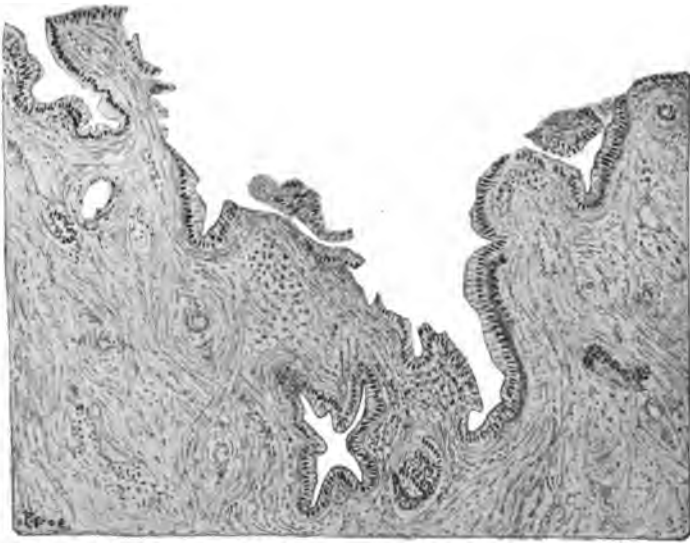


Fig. 4.—Internal lining of cyst wall.

The glandular character of the lining cyst wall in my case also adds to the supposition that this is of Müllerian origin.

The presence of both squamous and cylindrical cells, as found here, is probably due to a metaplasia. Under this term, Lubarsh has described the changes from one form of epithelial cell to another, as the change from a cylindrical cell to a squamous cell, and vice versa. Examples of this may be seen in the esophagus and vagina where the original cylindrical cell lining has become changed into a squamous cell covering.

Transitional changes are described by Zeller as occurring in

the uterus. He says: "In every form of chronic endometritis of the body and cervix layers of squamous epithelium can be produced." Gebhart holds the change to be rare in the uterus, but says it can occur after mechanical, chemical, and perhaps mycotic irritation. It has been pointed out by others that in a typical cylindrical epithelial cyst, as a glandular cystoma of the ovary, squamous cells are never found in spite of irritation.

Arguments in favor of its origin from a Gärtner's duct are: (1) its position in the antero-lateral wall close up to, and including, a part of the anterior wall of the cervix; (2) its shape, being somewhat cylindrical and lying in the long axis of the vagina; (3) the structure of the cyst wall including, as it does, layers of muscle fibres cut transversely and longitudinally; (4) the mixed cell lining of the wall; (5) the relative frequency as compared with those derived from the Müllerian tract.

It is not exceptional to find a mixture of squamous and cylindrical cells lining a cyst of this sort, and a number of just such cases have been described. Whether both forms of cell were present from the first, or whether one form preceded the other, the change occurring after the rupture, cannot be proven in this case. It is very likely, however, that both were present before rupture occurred. If the squamous cells appeared after rupture, their presence might be explained as due to extension inwards from the vaginal surface through the point of rupture, but if this were so we would expect to find them only about the point of entrance instead of at different places as is found here. The change is undoubtedly due, as mentioned, to a metaplasia.

If this cyst is of Gärtner's duct origin, how is the presence of glands opening onto the surface to be explained? It is possible that having reached such a size and involving so much of the cervical tissue in its wall, that there has been a spontaneous rupture of cervical glands into the cyst cavity.

The nature of the cyst contents in this case speaks as much for an origin from a Gärtner's duct as a Müllerian, and vice versa.

In a final consideration of all the features of the case I have come to the conclusion that the cyst here described is derived primarily from Gärtner's duct lying within the tissue of the anterior surface of the cervix.

The prognosis of vaginal cysts is good. In the smaller ones no treatment is necessary, but if the patient is being operated upon for some other pelvic trouble it is well to remove them. In the larger ones operation is indicated in case there are uncomfortable

or distressing symptoms. The operation consists in removing the whole cyst wall and closing the wound as in an ordinary colporrhaphy, or in excision of a part of the wall and then packing to allow healing by granulation.

According to Schröder, by leaving the base of the cyst this portion soon becomes covered with squamous epithelium so that after a time no trace is found of the original cyst wall.

In conclusion I wish to express my thanks to Dr. J. C. Webster for the opportunity of examining and reporting this case.

4801 FORRESTVILLE AVENUE.

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TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

Meeting of May 20, 1904.

The President, DR. EMIL RIES, in the Chair.

DR. CHARLES S. BACON read a paper entitled

VAGINAL CESAREAN SECTION AS A SUBSTITUTE FOR INDUCTION OF
LABOR IN CASES OF THREATENED ECLAMPSIA OR OF
BRIGHT'S DISEASE.¹

DR. HENRY F. LEWIS.—One would operate by the abdominal route or do vaginal Cesarean section, because emptying the uterus quickly throws the woman at once into the puerperal state, when eclampsia is less liable to occur, or ceases spontaneously. The percentage of deaths from eclampsia in the puerperal state is far less than in pregnancy or labor. The essayist has not convinced me why vaginal Cesarean section is better than the classical operation, although he has mentioned some of the advantages. In a large number of instances rapid delivery is easy in premature cases. But in a full term case it would usually take much longer to get the child out through the pelvis, that is, the head out either by forceps or as the aftercoming head, than in the case reported, because all that vaginal Cesarean section does is to eliminate the cervix and a considerable time is necessary for the head to pass through the pelvis. Thus we have a longer labor on the average than there would be with the classical operation. I cannot see that the advantage of the uterine scar in the vaginal operation is any better as regards danger of future rupture. We have as yet no vaginal method that is not attended with more or less danger of laceration of the cervix. In some of these cases the vaginal scar extends far up on one side, in front or behind. There is greater likelihood of having rupture from a laceration starting at the cervix than from the scar in the body of the uterus. With a properly performed abdominal Cesarean section the child is immediately brought out into the world in a much better condition than when it is quickly dragged through by forceps after a vaginal operation. The child has a better chance by the abdominal method, which is to most men easier of performance.

¹See original article, p. 488.

DR. RUDOLPH W. HOLMES.—It would seem on theoretical grounds, borne out practically, that in vaginal Cesarean section it would be better to remove the placenta first, and then sew up, rather than to reverse the procedure. The necessity of this is founded on two conditions: First, contraction and retraction of the cervix have not had sufficient opportunity to secure dilatation of the os; the opening into the uterine cavity is represented by the incision into the lower segment. To sew up the wound first might incarcerate the placenta, as the cervical canal would be too narrow to permit the egress of the placenta. Secondly, a uterus with the placenta in situ is larger than an empty uterus, therefore, in the latter instance the womb may be pulled down more easily and safely, expediting placing the sutures. Theoretically and practically, the proper course to pursue is to do a Credé, or better, a manual removal of the secundines, and then with a small tampon in the uterus, to sew up the incision.

DR. GUSTAV KOLISCHER.—Most obstetricians agree in emptying the uterus as quickly as possible in cases of eclampsia, though so-called obstetricians claim that they can cure eclampsia by internal medication. So far as the indication for interference in kidney lesions, without eclampsia, is concerned, it is hard to determine, as there is no kidney so bad that one may not hope for recovery. Whether Cesarean section or accouchement forcé is preferable must be decided. So far as the choice between laparotomy and vaginal section is concerned, I agree with Dr. Bacon. Besides the particular instances which he enumerated, there is one thing which is absolutely established, namely, that vaginal operations are better borne than the abdominal operation. In performing vaginal Cesarean section intestines are not handled, and one of the most dangerous consequences of a laparotomy, paresis, or paralysis of the bowel, is avoided. Besides, any infection of the peritoneum is practically excluded by vaginal Cesarean section. The only objection to vaginal Cesarean section which can be raised is an infantile or small vagina. Even this obstacle can be overcome to a certain extent by deep incisions, so that I agree with Dr. Bacon that if Cesarean section is indicated at all the vaginal one is certainly preferable to abdominal section, provided there are no obstacles such as he has mentioned.

DR. CHARLES B. REED.—We are indebted to Dr. Bacon for calling our attention to the usefulness of this operation in this dreaded and very fatal condition. It has been my personal experience that as long as a definite rule of conduct in cases of eclampsia is figured out, cases arise which will overturn it. In the absence of classical symptoms the indications must be necessarily more or less general. I have had no experience with the Dührssen method, but theoretically I believe that the objections to the classical section, on account of hemorrhage, are more apparent than real. In a recent classical Cesarean section, the incision being made in the anterior wall of the uterus and through the placenta, which was located on the anterior wall, without compression of

the lateral blood-vessels, the hemorrhage was much less than in many cases of normal labor without operative interference. I believe the tendency is at the present time to avoid any constriction of the uterus during the classical operation, and the hemorrhage is certainly too slight to be of any great importance, so that the objection raised by Dr. Bacon as a valid reason for the vaginal operation is more theoretical than real. Another criticism I might venture would be that Dr. Bacon's results are not at all convincing as to the value of the operation. I recognize, of course, the smallness of the number of cases and the extremely critical character of them, but 50 per cent. of recoveries of both mother and child is not very much better than we ordinarily expect in cases of eclampsia that are let alone. Still, any operation that promises any advance in the treatment of eclampsia is entitled to recognition and should receive the fullest possible credit.

DR. HENRY BANGA.—I would say, as Dr. Reed has said, that we cannot lay down a definite rule for all cases. Supposing the theory is correct that eclampsia is due to certain poisonous substances it has been recommended to flush the system continuously with salt solution. A high rectal tube is inserted into the intestine, and then hot salt solution is allowed, under low pressure, to run into the bowel, which is then emptied. This continuous irrigation is kept up for an hour, then the patient is given rest for an hour, after which the operation is repeated. Continuous flushing is very efficient; the secretion of the kidney increases materially in a short time. Continuous flushing of the system or transfusion of liquid is the only method that appeals to me as being more or less new and one which can be recommended. It should be tried by every practitioner who sees a case of eclampsia.

DR. J. CLARENCE WEBSTER.—I believe the operation mentioned by Dr. Bacon has come to stay, and will redound more to Dührssen's credit than his multiple incision method. I have had the opportunity of carrying out vaginal Cesarean section three times, once in a case somewhat similar to that narrated by Dr. Bacon. It is important to make a long anterior vaginal incision and carry it around the cervix. I do not think it will be often necessary to divide the posterior lip of the cervix. To anyone who is accustomed to the technique of vaginal work, this operation is not difficult. The bleeding is not at all profuse. Dr. Kolischer's criticism of abdominal Cesarean section is quite justifiable. If there be no contra-indication on the part of the hard or soft passages, such as contraction, there can be no doubt as to the advisability of performing vaginal Cesarean section, because the operation is shorter, there is less shock and one does not need to open the general peritoneal cavity. The placenta should be expressed or separated manually before closure of the incision is attempted. The incisions may be closed with catgut. A gauze tampon may be placed in the uterus. I am not so certain that there may not be trouble in after-labors from the stretching or tearing of the scar which is made in the lower uterine segment.

Neither am I sure that the scar will be less liable to stretch than a uterine scar which is produced by an abdominal Cesarean section.

DR. JOSEPH B. DE LEE.—My experience in vaginal Cesarean section comprises only one case rather early in pregnancy. It appears to me, from that small experience, that it would be difficult to practice the operation in the very last weeks of pregnancy, when the woman is at term, and the child large, without making extensive lacerations of both the lower uterine segment and the perineum, lacerations which in a case of eclampsia are not without importance. This is especially likely in those cases that have a rigid cervix, and for which the operation is performed. Usually, these cases have also a rigid and small perineum. No matter how definitely and completely we suture the torn perineum, it does not equal the natural perineum. It shrinks or is distorted in one way or another. Vaginal Cesarean section itself means simply the emptying of the uterus, and statistics and my own experience do not prove that a very rapid emptying of the uterus itself cures eclampsia. The mortality of post-partum eclampsia is not low; it is certainly not any lower than that of ante-partum eclampsia, and I must be convinced by statistics and further experience that rapid emptying of the uterus does do some good. After having had some patients who have died and some who have gotten well, I am not convinced they would not have done the same if other methods of treatment had been resorted to. I do not believe any single treatment proposed is suitable for all cases of eclampsia, but every case should be treated according to the indications present, whether these be for rapid delivery or not.

DR. LESTER E. FRANKENTHAL.—Did I understand you to say that the mortality from post-partum eclampsia was as great as that from ante-partum eclampsia?

DR. DE LEE.—That is my experience. Of eight cases of eclampsia, post-partum, four died. Dr. Bacon, I believe, has also had a similar experience in cases of post-partum eclampsia.

DR. KOLISCHER.—I cannot quote the exact figures now which I have read, but the statistics are large and were taken from fifteen clinics, and they show that the mortality of post-partum eclampsia is considerably lower than that from any other form of eclampsia.

DR. EMIL RIES.—As to the treatment of eclampsia, in my opinion, it is practically the same as snakes in Ireland—there are not any. We do not know what eclampsia is to this day, and we do not know how to treat it. It makes no difference what medicine you give, or whether you give any. With operative treatment we save a certain number of children that might die, and probably kill a large number of mothers that otherwise would not have died. I say this advisedly, because I have seen the lacerations produced by these rapid methods of delivery. I am not speaking now of vaginal Cesarean section, but of rapid deliveries

in which the general peritoneal cavity is not entered. I have seen these tears extending up under the peritoneum, with hematomas forming in the broad ligaments and extending up to the kidney and have seen the women die from the hemorrhage or from the sepsis which followed. Zweifel, who has had an extensive clinical experience, speaks pronouncedly against active operative treatment in cases of eclampsia. I have seen between twenty and thirty cases of eclampsia, and the treatment followed out in the clinic where I obtained this experience was conservative, and the patients did well under it. They did not all live, by any means. I do not see how anybody can expect a woman to live if she has necrotic foci all through the liver and kidneys, or how any operative treatment can cure that condition of the kidneys and liver. The active operative treatment in cases of pregnancy, on account of albuminuria or chronic or acute nephritis, has, in my experience, done as much harm as good. Most of the premature children that have been delivered by this interference with pregnancy have died; and the mothers have kept their chronic nephritis just the same. It is a question whether the artificial interruption of pregnancy does these women good in any way. We do not really know. Eclampsia and chronic nephritis are not the same thing. The kidney disturbance in eclampsia, which used to be considered the essential feature, is but one of the symptoms, and until we know what eclampsia is, what is its cause, what the processes that are combined and connected with it are, we cannot speak of any rational treatment.

DR. PADDOCK.—If a woman with chronic nephritis should become pregnant, I would like to ask Dr. Frankenthal whether he would interrupt pregnancy, or if he did not, what effect that pregnancy would have on the child?

DR. FRANKENTHAL.—Pregnancy would not have any effect upon the child. It might have some effect on the nephritis, and if a woman came to me sufficiently early I would not hesitate to interrupt pregnancy.

DR. PADDOCK.—Would it not produce a like condition in the fetus?

DR. FRANKENTHAL.—I do not think so.

DR. PADDOCK.—My experience has been different.

DR. BACON (closing the discussion).—I suppose that everyone recognizes that Bright's disease and eclampsia are not very closely related; that Bright's disease is not the cause of eclampsia, but that eclampsia may occur in Bright's disease. There is no reason why a patient should not have eclampsia because she had Bright's disease. The proportion of cases of eclampsia in chronic kidney disease is probably no greater than the proportion in women without it. The subject of my paper was limited to the induction of labor for these two conditions—threatened eclampsia and Bright's disease—and did not include induction of labor for eclampsia itself and, hence, part of the discussion was not exactly germane, although it was interesting and profitable. The objec-

tion raised by Dr. Lewis to the vaginal operation, that it would be much more difficult than an abdominal section, when the child was at term, and had to be extracted through the pelvis, was partly answered by Dr. Kolischer, who alluded to the possibility of making deep incisions into the vagina and perineum if the vagina was not prepared. Pulling the child through the pelvis, if it is not disproportionately large, is no more difficult in these cases than in any case where a rapid extraction by forceps is made, and his fear that the vaginal operation is more difficult than the abdominal is met by the experience of Dr. Webster and others who have performed the operation. There is not really as much hemorrhage as from the abdominal operation. Even when one is prepared, the cutting through of the placenta in the abdominal Cesarean section gives one considerable ground for fear, and it is true the hemorrhage in many instances with many operators has been serious, and has sometimes, as we know from statistics from the best hospitals, necessitated the removal of the uterus for the control of the hemorrhage. The assertion is probably justified that the vaginal operation is safer and no more difficult than the abdominal. In regard to the immediate removal of the placenta, the way I did in my first case was to wait until the incision had been partially repaired. The incision was not entirely repaired, as then it would be impossible to remove the placenta. The first two or three sutures are the difficult ones to insert, and before sewing up we must bring the incision into view. The uterus must be grasped and pulled down to introduce these sutures, and these are the ones that take up time, and they can be introduced before the placenta is expelled. We know the advantage of waiting in ordinary labor for the retraction of the uterus. A wait of ten or fifteen minutes is valuable, and during that time we may take care of the placenta by cutting off the cord and protruding membranes and pushing in a gauze sponge to retain them in place and begin the difficult part of repair. If there is no indication for getting the woman immediately off the table, it is very desirable to wait a few minutes to prevent hemorrhage. According to Dührssen, a severe hemorrhage may necessitate the use of a tampon; in fact, he advises the tampon as a routine treatment in all cases. It is not entirely a matter of indifference whether the tampon be introduced or not, and if it can be avoided, it should be. I believe the reason why the tampon is needed for hemorrhage is because extraction is performed at once. If this method which I have mentioned is employed, the tampon would probably rarely be needed. The incision must be long enough to permit the passage of the child's head. If the child is at term the cut must be of the same length as that in the abdominal operation, the child's head is about thirty-four centimeters in circumference, therefore, the incision must be half of that, sixteen or seventeen centimeters long, which must be the diameter of the opening. It is unnecessary to have as large an opening as that to remove the placenta; the incision can be half closed, and then the placenta expelled.

One of the important points in my paper was the indication for the operation to prevent eclampsia. If we are operating for threatened eclampsia it is necessary to know as much as possible about the meaning of the various symptoms. Dr. Kolischer's remarks were in agreement with my own in every respect, with the valuable addition of his preference for the vaginal Cesarean section, because with it there is no shock.

Dr. Reed's remarks brought up the point of the value of the indications, but he unfortunately did not add anything to them. I do not know that anyone can point out the value of the indications definitely at the present time. His objection to my results can be easily answered. The history of the last case, that terminated fatally, shows that this termination was not due to the operation. It was a most severe case of kidney disease, and her death was due to that and not to the operation. The first child was not saved; it was very premature, a thirty-one weeks' old eclamptic child.

With reference to flushing and elimination, I agree entirely with what Dr. Banga has said.

It is undoubtedly true that an incision around the cervix is necessary if the head is that of a full term child. With a premature child a longitudinal incision in the anterior wall of the vagina is sufficient to permit extraction.

I do not know why it is necessary to place a tampon in the uterus unless it is for the purpose of controlling hemorrhage, unless the cervix is closed too tightly. If the cervix is not yet dilated, or effaced before the operation, then it must not be closed entirely, lest there be no opening and we have no drainage from the uterus. A tampon should certainly be omitted unless it is necessary. Unless there is infection there is not much danger from the scar.

Dr. De Lee fears that there would be laceration of the lower uterine segment. I do not exactly understand that, because the object of the operation is making an incision so that there will be no laceration. We must make the incision so long that the head can be extracted, and if the operation is performed properly, there can be no laceration. Of course, laceration of the vagina or perineum cannot be avoided in some cases, and that is to be admitted as a possible objection.

As to Dr. DeLee's remarks regarding the mortality of post-partum eclampsia, I will say that my experience has been the same as his, namely, when the convulsions come on after labor the cases are serious. If the convulsions continue after labor they do not add to the seriousness of the case materially, but if they come on after labor, the cases seem to be more serious. I am well aware that this does not agree with the ordinary statistics.

The pessimism of Dr. De Lee in the treatment of eclampsia, as well as that of Dr. Ries, is rather discouraging, and it is not ex-

actly in accordance with the results from clinics. The results formerly in the Vienna Clinic, for instance, were not nearly so good as they have been recently. The results of operations before anesthetics were given were bad. Improvement was shown after operative delivery was instituted about ten or fifteen years ago. There has been an improvement both in the Leipsic and Vienna Clinics. It is Ahlfeld, in Marburg, who objects to operative delivery instead of Zweifel. His experience is not so great, because he has a small clinic.

I do not quite understand Dr. Ries' position in regard to active interference during pregnancy particularly in cases of kidney disease. It cannot be denied that a kidney lesion, like a heart lesion, is made worse by pregnancy. Why, then, should we not for the interests of the mother, at least, remove the child?

DR. FREDERICK J. TAUSSIG, of St. Louis, Missouri, read an inaugural thesis entitled

"THE HEMATOM-MOLE: ITS PATHOLOGICAL AND CLINICAL CHARACTERISTICS AND RELATIONS TO EVERY HYDRAMNIOS."¹

DR. J. CLARENCE WEBSTER.—The subject suggests as many interesting problems as are involved in the study of syncytioma malignum. Dr. Taussig has presented all sides of the subject very clearly, and while there is room for difference of opinion, I do not think, in the present state of our knowledge, that we can indulge in very profitable discussion. We must admit that this condition, first described by Breus, must be regarded as possessing a distinct pathologic entity. We have all seen moles, so-called bloody or fleshy moles, but few have seen this tuberoso condition, associated with a disproportion between the size of the embryo and that of the amnion. This disproportion is a matter of interest and very difficult to understand, on any other hypothesis than the one put forward by Dr. Taussig. I think Davidson first gave that explanation. I would like to ask Dr. Taussig if it may not be that some of these cases are not merely coincident occurrences of hydramnios with ordinary hemorrhage? I was formerly sceptical about the growth of the amnion and chorion after the death of the embryo, but not any longer. We have, I think, ample proof in what we know of hydatidiform degeneration, that the chorion will grow after the death of the embryo, and we also have proof from the cases that come under the category of syncytioma malignum. The presence of the embryo is not necessary to the growth of the chorion, and, it may be that this is sometimes true of the amnion. I must take issue with Dr. Taussig with regard to Langhans' cells. It seems to me, the occurrence of Langhans' proliferation in chorio-epithelioma malignum shows that the presence of the embryo is not necessary for their continued development. It is certainly interesting with regard to the amnion, yet not so remarkable after all, because when we remember the histology of the amnion we realize that it

¹See original article, page 456.

is probably scarcely nourished at all by the embryo, but rather by the maternal structures, consequently it is not surprising that occasionally we may find its continued development after embryonic death. Gottschalk's statement, in 1897, that circulatory disturbances, such as the absence of vessels in the chorion and embryo, caused the hematoma-mole, cannot, of course, be accepted.

DR. JOSEPH B. DE LEE.—Just a few words in regard to a statement made by Dr. Taussig, that the condition he speaks of will be found more frequently now, that it is recognized. I begin to think that the condition is not so rare as Dr. Taussig has said. I have seen five or six cases, perhaps more, in the Lying-in Hospital service, where we have from a hundred and twenty-five to a hundred and fifty abortions each year. I am confident I have seen one in a hundred and twenty-five cases that answered to the criteria of Dr. Taussig. Heretofore, we have not had the possibility of adequate investigation of these cases. We have these specimens and I shall take pleasure in investigating them to see how many of them are tuberos hematomas.

DR. EMIL RIES.—I have observed two such cases as the essayist has reported; one in 1893, and the other in 1894. One of the cases was published in the *Centralblatt für Gynäkologie*. Velpeau described such a condition under the name of "bosselures." In this the hematoma-mole and tuberos hematoma-mole have been thrown together. In the characteristic hematoma-mole there is a small amount of amniotic fluid; the cavity containing the amnion is largely filled with protuberances from the membranes, and among these it is difficult to find the little fetus. The second case I saw was such an instance. I had to search for a considerable time to find the fetus. I was in doubt whether it was a shred of fibrin, because the cavity contained some blood and fibrin, or whether it was a real fetus, until I found the eyes. I think Dr. Taussig's paper which was published in the *Archiv für Gynäkologie* some time ago contained some valuable contributions to this particular question, and I am sorry the Doctor could not go into the details of the case more completely. I was particularly interested in his investigations of the blood-vessels of these membranes. If the membranes are supposed to grow after the death of the fetus, one would suppose there must be vessels to nourish them. Some authorities, among them Gottschalk, deny absolutely that there are such vessels. I believe Dr. Taussig said that in some of the cases the blood-vessels were almost obliterated or partly filled with thrombi. In some there were fresh corpuscles. Dr. Taussig assumes the nutrition of these membranes by osmosis. I also noticed in his conclusions that he was extremely careful not to say the membranes grow, but stated that the fetal membranes increased in volume, which does not necessarily mean they grow, but they become larger by something put into them—for instance, the hemorrhage. This careful wording is the greatest importance in connection with these investigations. It is one thing to state a fact, and another thing to interpret it faithfully.

DR. TAUSSIG (closing the discussion).—As regards Dr. Webster's question concerning the possibility that some of these cases are merely coincidences of hydramnios with hemorrhages, I think there is to be considered the clinical factor that in all cases the ovum is retained a long time. After all, those are the main features that characterize the hematoma-mole. If we have hydramnios with hemorrhage forming more or less pedunculated tumors and with retention, that is all we need, to complete the picture, so far as we have been able to make it, of the hematoma-mole.

As regards Dr. De Lee's statement that he finds one of these cases in 125 abortions, I do not think they occur quite as frequently as that, and it is not always easy to draw the line in diagnosis. I do not feel convinced that we always have a typical picture, but rather, that to a certain extent there are gradations of these moles. We have more typical and less typical ones. When we come to the cases where the embryo is perhaps three or four centimeters long, and where there are subchorionic hemorrhages that do not protrude very far into the amniotic cavity. We cannot, however, any longer classify them as Breus' hematoma-moles.

I overlooked the cases mentioned by Dr. Ries owing to the unusual name under which they are published.

DR. M. L. HARRIS exhibited a specimen of

TWISTED PEDICLE OF A MALIGNANT OVARIAN TUMOR IN A GIRL TWENTY-TWO MONTHS OLD; REMOVAL AND RECOVERY.

The patient from whom this specimen was obtained was a little girl, twenty-two months old. She went to bed on the first of March in apparently perfect health, but was awakened during the night by severe pains in the abdomen and vomiting. The vomiting continued, but the pain diminished somewhat in severity. During the following day a physician was called, who tried to relieve pain and vomiting, and to effect a movement of the bowels; but they could not be evacuated. The condition remained practically the same during the night and the next day. On the evening of the second day the child's condition had become so serious that the parents finally consented to a consultation. I saw the patient about nine o'clock, nearly forty-eight hours from the time of the beginning of the attack. Her general condition was extremely bad. Features were pinched; eyes sunken; vomiting had continued persistently; no movement of the bowels had taken place; the pulse was 150, small and extremely weak. Examination of the abdomen showed considerable distention, with muscular rigidity. On palpation I was able to discover a distinct tumor. The distention and rigidity precluded an accurate outlining of the tumor, but it could be distinctly felt and was movable. The significance of this tumor was thrown somewhat in doubt by the statement of the attending physician. He said he had noted a swelling early that day, and that it had become larger during the day. He further stated that he was sure the swelling had not been there before, because he had attended the child two or three

weeks previously for bronchial trouble, and said at that examination he was sure no tumor was present. The feel of the tumor was such that I was convinced it was solid. It did not correspond to the feel of an invagination, which we would naturally think of, nor was it of the character of a volvulus loop. The diagnosis which I made was that of a solid tumor, and I was of the opinion that it was only indirectly concerned in the obstruction of the bowel. I had the child removed at once to the Children's Hospital and proceeded to operate. When I reached the hospital her pulse was scarcely perceptible, and the operation was done with almost no anesthesia. As soon as the abdomen was opened bloody fluid escaped, and the tumor which presented was immediately recognized by the Fallopian tube which was found passing over it. It was not difficult to diagnose an ovarian tumor with twisted pedicle. As soon as the tumor was raised the cause of the obstruction of the bowel was seen. This was due to the change in position of the tumor compressing the sigmoid. As soon as the tumor was raised gas began to escape from the anus. The operation was done very quickly, the pedicle ligated, the tumor removed, and the abdomen closed.

For two days I had no hope of the child's recovery. Vomiting persisted, and a very severe diarrhea, consisting of offensive mucous stools, began. These mucous stools persisted for two days; vomiting also continued, so that we could not administer any nourishment, either by the stomach or by the bowels. We simply used subcutaneous injections of salt solution, 250 c.c. in twenty-four hours. After forty-eight hours the child began to pick up, and then her recovery was very rapid.

This darkened portion of the tumor was in the periphery, where the greatest amount of hemorrhage had taken place, was very soft, so that in lifting it up it ruptured. The appearance of the tumor under the microscope is interesting. It presents in portions the typical appearance of a sarcoma. In other portions that of an endothelioma. There are areas of small, round and spindle cells typical of sarcoma; in other places large, flattened endothelial cells, with small nuclei, and there is in places a tendency to alveolar formation. The tumor is quite vascular, and following some of the loops of the vessels, there is an arrangement of cells having the appearance almost of an adenomatous structure. Following the loops of the vessels will be found cells looking almost like columnar epithelium, but they are not such, except in superficial appearance. I believe the tumor is one of mixed sarcoma and endothelioma. The interesting points in the case are the extreme youth of the patient, the mixed formation of sarcoma and endothelioma, and the twisted pedicle.

DR. G. W. NEWTON (by invitation) reported a case of

LARGE OVARIAN CYST.

On Tuesday, February 6th, I removed at the West Side Hospital a ninety-pound multilocular ovarian cyst from Mrs. L—,

aged 43 years, who gave the following history: She had had the ordinary diseases of childhood. Mother died at 33 from effects of a burn. Grandmother still living, 90 years old. Menses began at 12, were normal as to regularity and quantity, but quite painful until first child was born. She was married at 31, had two children, aged 8 years and 2 years. No miscarriages. Seven years ago in January she felt bloated and thought herself pregnant. A doctor whom she consulted said she was not pregnant. A little later she took cold at one of her menstrual periods and after that she never felt right in her pelvis. In May, after driving a fractious horse, she began to flow and had to go to bed; her



Ovarian cyst.

doctor told her she had peritonitis. She was sick in bed three weeks. Her menses did not appear again until August. Bowels were sore for the next twelve months. In July she came to Chicago to consult a specialist, who said she had a fibroid tumor in the walls of her uterus, and advised a vaginal hysterectomy. She did not believe his diagnosis was correct, therefore would not submit to an operation, but did take electric treatment twice a week for over eighteen months. In spite of these her abdomen grew gradually larger and she could feel a swelling in the lower part of the abdomen on the right side. The electricity having no apparent effect she stopped taking the treatments and consulted a woman doctor, who promised to cure her by giving medicine

internally. At this time her abdomen measured 41 inches. Internal medication for two years had no effect upon the size of her abdomen, although she thought she felt better while taking it, and she stopped it because she became pregnant. This pregnancy caused her no great inconvenience and she had her child as easily as the first one. She was conscious that the womb lay on the left side of her body because her abdomen was pendulous and chafed her left thigh just above the knee. Two months before the baby was born her doctor denied pregnancy. After the birth of her child the tumor kept on growing and she became more helpless, yet she did her work and her washing until last Thanksgiving day. Last November she came to Chicago to be treated by a masseuse, who claimed to cure tumors by rubbing and manipulations. On November 26th, after one of these manipulations, she had nausea, vomiting and great pain. The urine was bloody and scant. November 10th the menses stopped. The treatments by this masseuse continued until the day I saw her, February 14th. I was called because she had great difficulty in breathing. Naturally, she had very little breathing space, but the pain this night was due to pleurodynia. A very casual examination would have told anyone who possessed ordinary sense that this woman could live but a short time unless something was done for her. After making an examination and hearing her history a diagnosis of ovarian cyst was made and an operation recommended, to which she assented. The abdomen was enormously distended; she could stand and take a step or two, but could not walk. If she were lying on her back she could not turn on her side. Her lower extremities were not swollen and she was having no trouble in urinating; bowels fairly regular.

She was taken to the West Side Hospital, Monday, February 15th, and I operated the next morning, assisted by the interne, Dr. Shafer. Before the operation she weighed 199 pounds and her girth was 56 inches. After making an incision through the abdominal wall and peritoneum, which was much thickened, I punctured the sac with a large trocar and canula and drew off three or four gallons of dark coffee-colored fluid. Her heart did not stand the anesthetic very well, so I deemed it wise to make an incision into the sac and empty it as soon as possible. Then I proceeded to enucleate the sac. The pedicle had been broken off, but the sac was adherent everywhere, to peritoneum, intestines, etc. The firmest adhesions were in the region of the stomach. There was quite free hemorrhage upon breaking up the adhesions; it was necessary to ligate a few vessels; hot water and pressure controlled the rest. I flushed the abdominal cavity thoroughly, as quite a little of the fluid from the sac had escaped into it. To stop the oozing of blood gauze was packed into the upper and lower parts of the abdominal cavity and then I closed the abdominal wound. This gauze packing was removed the next day. Before completing the operation it was necessary to use

hypodermic injections of strychnine and normal salt infusion. The heart responded fairly well to these measures, but it was necessary to keep the foot of the bed raised for two days. Her temperature never went above 100° F., and she made an uneventful recovery, leaving the hospital at the end of five weeks.

An examination of the sac showed it to be multilocular.

Meeting of June 23, 1904. Conjointly with the Chicago Medical Society.

The President, DR. EMIL RIES, in the Chair.

DR. FRANK E. PIERCE read a paper (by invitation) entitled

A RARE FORM OF VAGINAL CYST.¹

DR. SAMUEL POZZI, of Paris, France, delivered an address on
PAPILLARY CYSTS AND PAPILLARY TUMORS OF THE OVARIES, WITH
A CONSIDERATION OF THE PROGNOSIS AND TREATMENT.²

On motion of Dr. Nicholas Senn, a vote of thanks was extended to Dr. Pozzi for his interesting and instructive address.

Following the address there was a symposium on

GYNECOLOGY FROM THE STANDPOINT OF THE MEDICAL MAN, THE
NEUROLOGIST, ETC.

GYNECOLOGY FROM THE STANDPOINT OF THE MEDICAL MAN.

DR. FRANK BILLINGS.—I finished my course as a house surgeon at the Cook County Hospital without having seen a single recovery from a laparotomy performed for the relief of the diseases of woman, but in the last fifteen years I have come to see the development of modern surgical gynecology and the final quarrels between the general surgeon and gynecologist as to whether gynecology should be a specialty. It is my belief that there is a surgery for the diseases peculiar to women, and it is due to the well recognized fact that woman is peculiar in her nervous development; she is peculiar in the development of some of her organs, and more particularly in the congenital deformities that occur in the pelvic and abdominal organs. In addition, she is vulnerable because she is subject to infection of the pelvic organs. She is also subject to those diseases due to the function of child bearing. As to whether there should be a surgical gynecology, separate from general surgery, is not a part of the subject. It is simply the relation of the surgery of those diseases and their pathology and treatment to medicine. I shall not at-

¹See original article, page 507.

²See original article, page 433.

tempt to discuss the case between the general surgeon and gynecologist. Every well-informed individual knows that every woman who suffers from an anatomical deformity of the organs within her pelvis should have it corrected in a scientific way. But there are conditions in the female pelvic region which have an associated anatomical change which is not easily recognized, yet may produce a profound impression upon the individual; and there are cases without anatomical defect of the pelvic organs of woman which present symptoms and are treated as gynecological cases. It is of this class of cases of which I desire to speak.

There are two classes of women which consult us as medical men. One is neurotic, complains of everything from the top of her head to the soles of her feet, may present anatomical changes, perhaps congenital in character or acquired, and possibly may show some defect in the pelvic organs of the same character as the congenital defect of the general abdominal organs. That woman will present symptoms while under observation, such as dysmenorrhea, backache, occipital pain and pressure, vertex pain frequently, with disturbances of the digestive tract from acid fermentation, constipation, etc., which would induce one to look at the pelvis for the cause, and because of the sensitiveness of that individual to manipulation, she may present such tenderness of the abdominal or pelvic organs under an examination that a mistake may be easily made. This type of case lies on the borderline between a neurosis and a real gynecological case.

As another extreme, are women who present real anatomical changes in their pelvis, yet in some cases without symptoms which point directly to the pelvis. They may complain more of some other organ of the body, of the stomach, of headaches, or of general disturbance. Between these two classes are all degrees of disease of the pelvic organs, with all of the symptoms which usually accompany them. The medical man who attempts to treat these two classes of cases rationally has a big responsibility, and at the beginning this lies in a proper diagnosis. If a careful and proper examination is made in these cases I think the truth will usually be revealed. And this examination should include every part of the woman's body before she is assigned for treatment, whether it be medical or surgical. By that I mean an examination of the whole nervous apparatus and of the separate organs of the body, including the pelvis. An examination of a married woman, one who has borne children, and who presents on vaginal examination only a prolapse, or changes that are not well recognized, should be thorough; while in the unmarried woman, or woman who has not borne children, the examination should not be limited to one particular region. A rectal examination with the index finger will reveal more of a pelvic condition, especially if it is obscure, than will a vaginal examination either with the finger or with the aid of the speculum. When one is in

doubt about a complete examination of the pelvic organs, or if in a young woman only slight abnormalities are found after examination, it is only fair that she should receive the benefit, first, of medical treatment, for the reason that in many individuals a neurasthenic condition exists; the nervous apparatus is so acutely excited by the cause, whatever it may be, that they feel everything. They feel pain where it should not be. In other words, many of the phenomena assigned to neurasthenia are present, and there is no more reason for an operation on the pelvic organs of such women, who present only slight anomalies or defects, than to operate on a woman who presents a congenital prolapse of the stomach, or to operate on a woman with a partially movable kidney who has it because of congenital defect. In every case where an abnormality is found, with absence of abnormality elsewhere, it is surely a surgical case, just as surely as is appendicitis. But the same abuse that is shown in operating on the pelvic organs of women for slight changes is likewise shown in operations upon the appendix in this age. Many ovaries have been removed when there was no good reason for their removal. I could cite many examples. Twelve years ago a young woman of wealth came to me from Wisconsin. Her parents informed me that she was engaged to be married. She was a neurasthenic, and suffered from everything and anything she could tell me of, including headaches, backache, disturbance of the heart, of the digestive organs, constipation, disturbed menstruation, etc. I made a careful examination and I could find no single defect anywhere excepting symptoms which ordinary neurotics present. I so advised her, and directed a rational treatment upon that basis. She did not materially improve. She went to New York, where both of her ovaries were removed because she presented those symptoms. Her engagement was broken off because of the operation, and she is as much a neurotic to-day as before her ovaries were removed. The woman's life is ruined. There was no more reason in my opinion for removing her ovaries than for removing her ears. There are plenty of similar cases. On the other hand, many physicians make a mistake in the other direction.

Within ten years I have had a patient in whom I made a careful examination, including a rectal, but found nothing abnormal in the pelvis. The patient was obliged to give up work; she was put on the Weir Mitchell rest cure. She improved for the time being, went to work, and very soon collapsed. She became worse and worse and again consulted me. My suspicions were aroused by the presence of edema of the ankles. I examined her urine and heart, but these examinations were negative. She told me she had a sense of pressure in the pelvis, and in examining the pelvis I found a large fibroid which was the cause of the woman's neurasthenia. The tumor was removed and she entirely recovered.

Those are examples of extreme cases. My conclusions, therefore, are these: There is a surgical condition of the pelvic organs of women that is peculiar to women; that is associated with anatomical changes in many instances. When these anatomical changes or pathological conditions are present, in many cases they need removal. In others an operation may not be required. If there is no detectable cause for the symptoms from which they suffer, or in the event that they present symptoms pointing to their pelvic organs, and a careful examination shows nothing, I must say to the surgeon, hands off!

GYNECOLOGY FROM THE STANDPOINT OF THE NEUROLOGIST.

DR. ARCHIBALD CHURCH.—I shall use the time at my disposal to direct attention to the relation of errors, acquired or inherited, in the genital tract in women to the more common nervous and mental disturbances.

From time immemorial sexual disturbances or alleged sexual irregularities have loomed largely in the eye of the laity and of the profession as being associated with all of the vagaries of the mind and all the errors of the body. Sexual matters are closely associated with the religious world, and the entire organization of human society revolves within a sexual sphere. The earliest form of worship was sub-worship, then phallic worship, the image of idolatry being the male organ of generation. This form of worship at one time was as wide in its extent as the human race. Traces of it are seen in the maypole dances in springtime. This mystical and occult relation of sexual affairs to divers abuses and uses of the genital apparatus naturally became all important through that tendency of the human mind to seek a cause. If a young man became mentally disturbed, depressed or nervous, or had fits, or presented any manifestation of an ill-balanced nervous apparatus, immediately there was, and is, talk of masturbatory practices, or if some abnormality is found in the genital tract, the whole train of his mental or nervous phenomena is attributed to some such cause. But there is a marked difference in the sexes in relation to this question. Men do not accept mutilating operations upon the genital tract with the equanimity which is presented by the gentler sex, who peaceably accept unsexing operations without much question as to their effect, provided they can be relieved of some trivial or temporary ailment. This diversity between the sexes is shown when I ask how many cases of sexual neurasthenia you have seen in women. This is a disability which seems to be confined very largely to the male portion of the human race.

In a young woman any error of menstruation, or retardation of the establishment of the function of menstruation is considered to be a matter of the gravest import, so that a young woman who has not menstruated before the age of seventeen is looked upon with great anxiety by the mother, and if any nervous mani-

festation arises immediate attention is directed to the establishment of the menstrual flow in the hope that it may set aside all the abnormal nervous phenomena. If menstruation is irregular, or if it be attended with a little pain, or if the quantity of the flow is abnormal, attention is directed to the condition of the genital tract, with the hope that the correction of an apparent error will result in benefit to that nervous condition which is the question of importance in the majority of cases.

In the same way, the question of marriage arises, and the question of celibacy, of bachelorhood and spinsterhood come to the attention of the medical man. And here, again, almost invariably attention is directed to the genital tract as bearing on the question. There is, I believe, such a thing as physiological bachelorhood and a physiological spinsterhood; there are those who from inherent conditions are not destined to marry; they refrain from marriages through the dictates of an organization which has its mainspring in a bad heredity; it is one of Nature's ways of weeding out bad stock.

Epilepsy.—One of the first subjects of a neurological character to which I desire to call your attention is that of epilepsy in relation to the genital tract and its disorders. If there is anything upon which neurologists are disposed to agree, it is that epilepsy is a manifestation of a bad organization, yet it is quite common for the medical man when confronted with a case of epilepsy to have his attention called to some alleged irregularity of the function of the genital tract, examination demanded, and if there is the slightest deviation from what is considered normal, correction, by surgical measures if necessary is insisted upon by the family of the patient or the medical adviser. Cases of this sort usually result disastrously. Though epilepsy may be periodical in its manifestations, many epileptic women, owing to that change in nervous tone and in the general functions which make the menstrual period, are then liable to have convulsions. But the mere fact that a woman has a convulsion in association with the menstrual period or mid-period attracts attention and forces investigation of the genital tract. Too often when the genital organs should be let alone they are subjected to mutilating operations. I think we can congratulate ourselves on the fact that the operative furor is becoming less than it was a few years back. I recall an interesting and instructive case in this connection:

Mrs. B. E. W. was referred to me in April, 1900. The patient was 33 years of age, had been married ten years, had had three children, and no other pregnancies. An uncle had been epileptic, otherwise the family history was negative. She had always been a nervous individual. Menstruation began at thirteen, was painful in character, and so remained until the first child was born. During her girlhood the patient had so-called fainting spells at the menstrual periods. At the birth of her second child she suffered laceration of the womb and perineum, and

was said to have had ulcerations of the womb which persisted for a number of years. About six months previous to my seeing her she suddenly fell in the bathroom, striking her back on the edge of the tub and her head on the floor. The husband found her cyanotic, with a slight froth on her lips, and a period of delirium followed. A second similar attack occurred a few months later and subsequently these attacks coincided with each menstrual period. As a result she had drifted to one practitioner after another and finally to a sanitarium where the uterus, ovaries, hemorrhoids, and clitoris were removed, and the perineum was restored, without, however, any effect upon the epileptic attacks which instead of recurring at each menstrual period came on more frequently and at varying intervals, and have so continued, in spite of ordinary treatment, ever since.

This is another instance of meddlesome operative management, of misdirected activity, of wrong reasoning, and of mistaken cause. Epilepsy was with this woman a matter of her general architecture, inherent in her cellular structure. Perhaps it was in the bone; it was in her general makeup, and the removal of one or two organs here or there could have no more to do with its correction than the direction of the wind. This experience is not a singular one. Operations for the removal of the ovaries in epileptic women have been performed—almost perpetrated, I was going to say—and invariably have resulted, in my experience, in an aggravation of the condition.

Hysteria.—Of course we now know that hysteria is not a disorder which arises from the uterus. However, in many cases of hysteria, particularly in women, the genital tract is de facto incriminated by the medical examiner, and by the relatives of the patient. It is not impossible for a disturbance in the genital tract to set up a hysterical condition. In the predisposed subject a disturbance in the eye or ear, an irritation about the anal aperture, or a nightmare, or any physical or mental strain may be an inciting cause of hysteria. As a rule, however, hysterics are not the product of disturbance of the genital apparatus. I have yet to know of any case of major hysteria that was corrected by surgical or gynecological intervention. Those cases which are temporarily benefited, and those which are cured, if such cases there be, by gynecological treatment of a surgical character, are cured not through the genital route but through the cerebral pathway. It is the influence of suggestion in all probability brought to bear by surgical intervention upon the genital tract that produces the mental change. Hysteria is not a genital but a cerebral disease.

Neurasthenia.—I find my own impressions are borne out by the remarks made by Dr. Billings, that neurasthenia is a generalized disease. It is not a genital disease, and genital tinkering and genital manipulations are not calculated to remove neurasthenia. While neurasthenia may be aggravated by a local condition, ordinarily the removal of the local condition itself is not adequate to remove the neurasthenia. The statement made by

Dr. Billings in regard to neurasthenia is confirmed in an article in a recent number of the *Wiener Medizinische Wochenschrift*, by König, who studies the disturbances in the genital tract in their relation to the more common nervous manifestations.

Insanity.—In the adolescent period there is a time when young women with inherited tendencies are likely to show mental and temperamental disturbances. Under the domination of fixed ideas they may refuse to go upon the streets; refuse to touch certain articles; refuse to do this, that, or the other thing; they become irritable and unmanageable. These are manifestations of their makeup, yet nine times out of ten some error in the functions or conditions of the genital tract is sought for, or to such error is attributed an attack which goes back for its source into the ancestry, and which appears in an individual at that period of life when with the demands of development a greater strain is placed upon her inherently weak organization.

Miss E. G., 27 years of age, was referred to me by Drs. Sawyer and Dudley in May, 1893. The girl's family history showed nothing that was notable as far as could be obtained. She was peculiar as a child, and shunned the companionship of girls, seeking that of married women, throughout her younger years. Menstruation first appeared at eighteen and at that time she became wilful and unmanageable. For an entire year she refused to leave the house, acting under the domination of a fixed idea, that was not well formulated but embraced the fear of going out, and during this time she acted strangely. At each menstrual period her nervousness and strangeness were accentuated. These periods recurred with regularity and were normal in character as far as physical conditions were concerned, but each recurring menstruation was marked by about eight days of irritability with great nervousness and restlessness. The day before the flow the patient was depressed. It subsequently appeared, and the condition continued until the patient applied for relief, that the menstrual period was attended with violent sexual excitement which lasted during the flow and for a week after and finally became so intense as to be practically uncontrollable, leading to numerous relations with men and resulting in a pregnancy, which miscarried at the sixth month, some four years before I saw her.

At each menstrual period she became irritable, excitable, obstinate and violently destructive; sometimes smashed dishes and attacked other members of the family, and said that when excited sexually she felt an uncontrollable impulse to smash dishes and other breakables. During the period of sexual excitement complete satisfaction has never been secured, and the climax of the orgasm is never reached. Lately, in fear of pregnancy, she has avoided sexual relations, which in former years she had carried on flagrantly with any one she could meet, irrespective of station or even of personal cleanliness.

To be brief, physical examination disclosed nothing wrong as

far as the body organs were concerned, nor did a pelvic examination give any index of disturbed or diseased organs. In view of the likelihood of disgrace and the fact that she had lost all sense of shame, it was advised that menstrual life be terminated by a double ovariectomy, and this was successfully performed by Dr. Dudley at St. Luke's Hospital. The following period for menstruation was not attended by a return of the sexual excitement and mental perversity, and several such periods elapsed without a recurrence of these untoward features, but gradually they reappeared and instead of being periodical they became persistent and unbroken, so that the patient subsequently was admitted to the hospital for the insane at Kankakee, and after a residence of about a year she left unimproved, and was again admitted and remained for a long period of time, her final discharge from the hospital showing an unimproved state.

In certain gestational cases women are insane only during pregnancy. Attention naturally is drawn to the genital tract and the question of operation arises. Let me cite a case which illustrates this variety and dates back about eight years.

Mrs. F., a clergyman's wife, 34 years of age, had had three children. During each pregnancy she had been mentally disturbed with a tendency to depression and a suicidal feeling associated with an inclination to do harm to her children. She was pregnant at about the fifth month. The pregnancy had proceeded in a normal fashion, but she was again depressed, had to be watched on account of threats of suicide, and kept apart from her children, whom she had an inclination to destroy. She had a partial and depressing recognition of the enormity of such inclination, but felt that the impulse would be irresistible if opportunity served.

The family history of this case presented some evidence of lack of mental balance, but nothing very definite. The question now arose whether pregnancy should be terminated, first, because of the mother's mental condition, and second, because of the undesirability of having a child born of an insane mother. Dr. E. C. Dudley, who referred this problem to me, stated that physically there was no reason why her pregnancy should not go to term.

In view of the fact that the children already born showed no evidence of mental defect, and physically were in perfect health, coupled with the fact that the father was of an unusually robust and vigorous physical makeup, the termination of pregnancy except in the natural course of events was strongly interdicted. In due time the child was born, and now, after a period of eight years, neither it nor its older brothers and sisters have shown the slightest mental or neurotic tendency. The mother's insanity promptly subsided within a few weeks after parturition.

Puerperal insanity, on the other hand, is strictly surgical and gynecological. It is almost invariably the result of sepsis and the most important measure for its correction is the cleansing of the pelvic contents.

But the insanity of pubescence, of gestation, of the climacteric, is not due to fibroids, carcinoma, salpingitis prolapsus or misplacement of the uterus; it is not due to errors of the menstrual function, but is another manifestation of blighted stock, another evidence of inherited instability, and its prophylaxis is a sociological question and depends upon the proper selection and breeding of the human race.

Finally and most emphatically I do not wish to be understood as saying that pathological conditions should not be corrected; that a neurotic or insane woman should in any sense be deprived of the benefits of clergy, surgery, or gynecology, but to expect a great deal in the management of nervous cases through the gynecological route, is, in my experience, attended by disappointment.

GYNECOLOGY IN ITS MODERN CONCEPTION.

DR. FERNAND HENROTIN.—Gynecology as a specialty has a definite, positive, real field. There are many ways of curing hysteria and neurasthenia by the so-called gynecological route. Gynecologists have now learned to be quite expert neurologists and curers of neurasthenia. For many years a great deal of abuse existed in gynecological surgery. When a department of medicine has grown to the proportions and attained the importance that gynecology has during the last quarter of a century, it is but natural that many mistakes during the developmental stage must have been made. How much these mistakes have taught neurologists and the internal medical men I leave you to judge.

Obscure diseases were treated in the past by an indefinite number of drugs for many years, and who has done more to drive out the ineffectual drugging of the past than the abdominal surgeon? And who has done more abdominal surgery than gynecologists?

We cannot hope to compete with the opposition for eloquence; but we know that gynecologists have not only benefited but cured cases that were not relieved by neurologists. Of all men generally who make the poorest gynecological diagnoses, the neurologists are the worst.

A woman comes to town with a flatulent dyspepsia, perhaps neurasthenia, and let us suppose she has something the matter in her pelvis. She goes to the internal medicine man and immediately she is put on some sort of treatment, probably stomach lavage. She is put to bed, put under treatment with nitrate of silver and beef juice, and she recovers for a while. Or else it may be a case of auto-intoxication, or something of that kind, in which the bowels are at fault, or the case may be one of neurasthenia. If she happens to go to a neurologist, she has neurasthenia, and she gets the rest-cure, massage, etc. If she has a retroversion of the uterus, and happens to consult a gynecologist, she is treated for a time, and perhaps undergoes an operation for the correction of the retroverted uterus. We have a great

deal to learn. I and my brother gynecologists have cured a great many cases of neurasthenia and hysteria.

From the time woman is born her sexual apparatus is one of the central points of attention of her whole mind, and for generations it has been. A great many of the nervous disturbances in women are due to disturbance of the pelvic organs, even without pathological lesions, and whatever the gentlemen may say to the contrary, we know that many a woman has been cured either by operative procedures or treatment addressed to the pelvic organs; not that it should be made the rule, but gynecological cases should be treated in the same way as all cases of disease. The gynecologist should be a physician first of all, and our modern conception of gynecological work and of gynecology involves a thorough knowledge of other branches of medicine, particularly as applied to gynecology. Might we ask the neurologists and the internal medicine men to prepare themselves for the practice of their branch of the profession by a thorough knowledge of the gynecological side, for that is a necessity as well?

The question, after all, as Dr. Billings has said, is one of diagnosis. A diagnosis even of a complete pathological entity is often difficult for even the man who has paid special attention to gynecology. I might cite, for instance, the diagnosis of a ruptured extrauterine pregnancy. The diagnosis, for example, of certain low grades of inflammatory diseases of the pelvis is something which a great many men do not recognize, and in the diagnosis of which they are often very deficient. Take, for instance, a low grade of peritonitis, accompanied with many adhesions and peritoneal attacks, with the presence of a small hydrosalpinx, and most medical men do not know these things or recognize these cases. Examinations will be made for typhoid fever, and the gynecologist later will make the diagnosis and verify it by operation. Hydrosalpinx of considerable size is extremely difficult to diagnose if it is only partially felt. A moderately enlarged ovary, even though it be slight, may be slighted. It may be the beginning of a sarcoma or carcinoma; the gynecologist will watch it as he knows its importance. Gynecology is not any farther behind than some of the other branches of medicine; considering the length of time in which it has developed, it has done its share, and its full share, in the development of all we know of medicine to-day. There are many men in our profession who are constantly using gynecology as a cloak for terrible practices, for the deception of the public and the exploitation of patients. Our conception of modern gynecology is that it should only relate to that portion of the cure of the patient which demands gynecological knowledge. Our conception as to the internal medicine man and neurologist is that they should be men engaged in the practice of medicine who know enough of gynecology to make proper diagnoses.

DR. HUGH T. PATRICK was asked to participate in the discussion. He said: Neurologists rarely have an opportunity to see the wonderful cures of neurasthenia, of hysteria, headache,

backache, dizziness, and palpitation made by gynecologists. The cases we see and upon which we must base our judgment and conclusions are those that are not cured by gynecologists, and we see enough of them to form some sort of an opinion. Knowing that it is much easier to criticize and find fault with others than to see our own faults, I am going to point out some of the things in which gynecologists have sometimes appeared to me to be at fault.

1. Gynecologists, I think, are sometimes misled by their skill, by the very facility with which they remove sound and unsound organs; by the very safety which accompanies a beautiful and simplified technique, so that they operate because it is easy, and simple; it is so safe, and it is so much easier to remove a morbid condition and see what the result may be than it is to arrive at the conclusion by the more laborious and more erudite methods of general diagnosis.

2. Sometimes the gynecologist is too prone to consider that because he finds abnormality, necessarily that abnormality must be removed; and concerning this point I am feeling not at all timid. That is a radically erroneous principle upon which to proceed in any case—gynecological, surgical or medical. The fact is that mere morbid anatomy is an indication for absolutely nothing unless it gives rise to morbid physiology.

3. Given certain symptoms, certain complaints, or certain disorders of physiology, and given in the same organism certain morbid conditions, it has seemed to me frequently that the gynecologist should spend a little more time in working out the relation between the symptoms and the morbid anatomy. The mere fact of the existence of certain symptoms, complaints, or illnesses in a certain individual is no proof whatever that those symptoms are dependent upon the first batch of morbid anatomy which may strike the eye or index finger.

4. I should like to see the gynecologist spend more time in cultivating a broad knowledge of the symptoms he treats. To come right to the point, gynecologists treat neurasthenia; they treat hysteria, headache, backache; epilepsy sometimes. They treat migraine; they treat other nervous affections which I might mention, and yet I doubt very much if there are half a dozen members of the Chicago Gynecological Society who could pass a fairly good examination in neurasthenia, hysteria, epilepsy, and migraine. I am not talking about pseudo-gynecologists, but good men. I should like to mention one case to illustrate what I mean.

Five years ago a woman, thirty-two years of age, was brought to town to consult a gynecologist and myself. There were unmistakable abnormalities in the pelvis. She had a ruptured perineum, a lacerated cervix with erosions, and some displacement of the uterus. The first thing that impressed me was that the gynecologist seemed to be very little interested in the history of the case. There was a very important history as to the develop-

ment of her symptoms, which were entirely nervous. I was very soon convinced that he did not know how to take a history of a nervous case. He expressed the positive opinion that the woman could never be well until her pelvic organs were fixed up. It so happened that the physician who brought the patient was an anomalous sort of individual, who had more leaning toward neurology than gynecology, and consequently the decision was arrived at that I was to try my hand at her, and if anything further was needed, it would be done. In a few weeks the patient went home feeling quite well. She still had her ruptured perineum, her lacerated cervix, with erosions, I suppose. She had her displacement if she had it before. But she went home feeling well; and began to do housework, except the rougher work. This was five years ago. Soon she began to do more and has since that time been doing the cooking, sweeping, scrubbing, washing, ironing; carrying in coal and water, and carrying out all the ashes and garbage for the family.

5. I have sometimes noticed that when a gynecologist finds nothing abnormal in a woman, when her pelvic organs are all intact and in proper geometrical relation to the abdominal walls and pelvic floor, he concludes there is nothing the matter with her. In other words, he goes to the other extreme. This is much more infrequent than the other things I have mentioned.

DR. POZZI, of Paris, was invited to take part in the discussion. He said: It is necessary for every medical man to study all subjects in order to be able to make a good diagnosis. It is very essential to differentiate between a nervous and a gynecological case. Recently an error was made by a distinguished confrère of mine, one of the professors of medicine in Paris. He had treated a patient for a long time for what was supposed to be dilatation of the stomach, with various means, among them lavage. As the patient did not improve, I was asked to see her with him. I saw the woman, examined her carefully, and stated as my belief that the case was one of extrauterine pregnancy of probably six months' duration. Accordingly, a laparotomy was advised, consented to, performed, and I was able to show my distinguished confrère the fetus. This and many other cases I could mention to point to the fact that medical men ought to know a good deal about surgery, gynecology, and internal medicine, if they wish to become experts.

DR. FRANKLIN H. MARTIN read, by title, a paper on
PREGNANCIES FOLLOWING OPERATIONS FOR THE CURE OF RETRO-
DISPLACEMENTS OF THE UTERUS.

RUDOLPH W. HOLMES, M.D.,
Editor of the Society.

TRANSACTIONS OF THE SECTION ON
GYNECOLOGY OF THE COLLEGE OF
PHYSICIANS OF PHILADELPHIA.

Meeting of April 21, 1904.

DR. H. D. BEYEA, *in the Chair.*

DR. E. A. SCHUMANN (by invitation) presented the records of
A CASE OF TUBERCULOSIS OF THE FALLOPIAN TUBES, OVARIES, AP-
PENDIX AND MESENTERIC GLANDS.

The case was that of a young negress who was admitted to Dr. J. M. Baldy's service in the Gyncecan Hospital, December 16, 1903. The patient was 27 years old, married, primipara, 1 miscarriage.

Her family history was negative except that several members of the family had died of paralysis. There was no history of tuberculosis. The previous history revealed nothing except the fact of an attack of pleurisy five years before.

Her menses were established at 13, always regular, flow lasting three days, but associated with severe dysmenorrhea before marriage. Since marriage she has noted no menstrual disturbance.

Her present illness dates from one year ago when she had a severe attack of appendicitis, lasting one week.

Since then she has suffered several other attacks recurring with increasing frequency, but not of greater severity than the primary one.

Upon admission to the hospital, patient complained of headache, backache in sacral region, severe, dull pain in right iliac fossa, occasional nausea and great nervousness. There was no menstrual disturbance whatever.

Physical examination revealed no demonstrable visceral disease save an area of tenderness in the appendiceal region. The patient ran a slight evening temperature, averaging 99.2°. Her pulse and respirations were normal. No physical signs or symptoms of tuberculosis could be elicited.

Operation December 21, 1903, by Dr. Baldy.

Celiotomy—median incision. A chain of enlarged glands was found in the meso-ileum with the appendix lying against and adherent to the largest of the glands. The appendix was universally adherent and was curved sharply upon itself, the convexity of the curve being adherent to the mesenteric glands described.

The Fallopian tubes were densely adherent to the surrounding structures, slightly enlarged, the fimbriæ matted together. The uterus appeared normal. The appendix was amputated, the clus-

ter of hypertrophied glands dissected out, and the tubes and ovaries excised. There were no other palpable glands noted. The peritoneum was normal, no evidences of tubercular process being detected.

The patient made an uneventful convalescence, the highest temperature recorded being 101.2° . The temperature reached the normal in six days and the patient left the hospital in three weeks. She has since remained perfectly well.

MACROSCOPIC EXAMINATION OF SPECIMENS.

They consist of the vermiform appendix, a cluster of enlarged mesenteric glands, and both Fallopian tubes and ovaries.

The appendix measures 6.5 cm. in length and 6-9 mm. in diameter. Upon the surface are dilated and tortuous blood vessels and many light adhesions.

The organ is curved upon itself in a horseshoe form; the apex of the curve being adherent to the group of glands. The consistency is somewhat harder than normal, but no nodules can be detected. Meso-appendix thickened and covered with rather dense adhesions. Upon section the muscular coat of the appendix is slightly thickened; the lumen is of normal calibre and contains inspissated fecal matter.

Firmly attached to the appendix is a group of three enlarged mesenteric glands. They were dissected out from between the layers of the meso-ileum and are hard and dense in consistency and of irregular outline. The largest of them measures $2.5 \times 2 \times 1.5$ cm., the others being somewhat smaller. The surfaces of the glands are covered with dense, old adhesions. Upon section they consist of a light retaining wall containing a homogenous, dense caseous mass; which in certain localized areas is suggestive of beginning calcification.

The left tube measures 5 cm. in length and averages 1 cm. in diameter. It is not convoluted; the surface is covered with dense adhesions, especially on its posterior aspect, but no tubercles can be detected. The entire tube is thickened and infiltrated, but no nodules are present. The abdominal ostium is closed, the fimbriae being matted together.

The mesosalpinx is much thickened and covered with dense adhesions, especially well marked on its posterior aspect.

Upon section the tube is thickened, the muscular wall slightly hypertrophied, the lumen much decreased in diameter. No rugae can be detected.

The right tube is thickened, tortuous and in intimate relation with the ovary, the mesosalpinx being entirely obliterated. The surface of the tube and ovary are covered with dense, old adhesions. Upon section it is in every way comparable to its fellow.

The left ovary measures $4.5 \times 2.5 \times 1.5$ cm., is covered with rather dense adhesions posteriorly and is apparently the seat of a chronic oöphoritis and perioöphoritis. Upon section very few develop-

ing follicles were noticed. The same description applies to the right ovary.

MICROSCOPICAL EXAMINATION OF SPECIMENS.

Sections made from the left tube show a moderate hypertrophy of the muscular coat with some increase of fibrous tissue. The blood-vessels are numerous and show round cell infiltration about their walls. The muscular coat is invaded by many typical miliary tubercles in various stages of development, many showing giant cells. The mucous membrane is almost entirely destroyed, the lumen of the tube being bounded by the muscular wall. The columnar epithelium is also wanting, being present only in isolated patches, resting directly upon the muscle. The lumen of the tube is filled with a mass of caseous and degenerating material showing an occasional tubercle. The entire tube is the seat of a high degree of round cell infiltration.

The mesosalpinx is much thickened and contains an excess of fibrous tissue with a moderate degree of round cell invasion. A few small and imperfectly developed miliary tubercles are scattered throughout the tissue.

Sections through the right tube show a condition almost identical with that of the opposite side save that the mucous membrane and its columnar epithelium are intact and are the seat of numerous typical miliary tubercles. The lumen of the tube is much diminished, but the rugæ are fairly well marked.

The right ovary upon section is the seat of a perioöphoritis and a low grade öophoritis. Few developing Graafian follicles may be noted; there is a hyperplasia of the fibrous tissue with some round cell infiltration. An occasional small, but well developed tubercle may be seen scattered throughout the cortex of the organ. The left ovary is in every way similar.

The appendix upon section shows a hypertrophy of its muscular coat with some little hyperplasia of connective tissue. The mucous membrane is swollen and in places degenerated, the glands being hyperplastic. The dense round cell infiltration is present throughout the sections. Invading the muscular wall and scattered throughout the mucosa may be seen occasional well defined miliary tubercles.

No areas of caseation are present. The enlarged lymphatic glands present, upon section, a hypertrophied fibrous capsule enclosing masses of homogenous and structureless caseous material.

The fibrous tissue forms trabeculæ, dividing the gland contents into lobules.

A moderate degree of round cell infiltration is present in the capsule and rarely an epithelioid celled tubercle may be seen.

In the gland contents several areas of beginning calcification are noted.

The case is evidently one of chronic diffuse tuberculosis belonging to the class of "unsuspected tuberculosis" of the Fallopian

tubes first mentioned by Williams, and impossible of diagnosis save by microscopical examination.

Whether the tuberculosis was the primary tubal lesion or whether it was engrafted upon a preëxisting salpingitis, it is impossible to determine, but from the fact that the woman had been pregnant and had not noticed symptoms of acute salpingitis prior to the development of her present condition, it would seem that the primary lesion was the tubercular process.

The primary tubercular focus seems to have been the chain of mesenteric glands, the appendix having been affected by contiguity and the tubes and ovaries being the seat of a secondary process.

Careful physical examination failed to determine any areas of consolidation in the lungs or signs of tuberculosis elsewhere, and the patient has since remained perfectly well.

DR. THEO. A. ERCK.—On two occasions I have dissected out the mesenteric glands. There was no microscopical examination made of the glands or appendix in these cases. The glands were enlarged and cheesy and the women presented other symptoms of tuberculosis.

DR. BROOKE M. ANSPACH.—I have seen two cases with Dr. Clark which it might be worth while to mention. In one of them the woman was to be operated on for appendicitis. The appendix was taken out but found to be entirely normal, except for surface adhesions. In the meso-appendix there were two enlarged and caseous glands, probably tubercular, although upon histologic examination there were no giant cells. In another case at the operation three enlarged calcified glands were found in the mesentery of the small intestine. The origin of the tubercular infection in both instances could not be determined. Neither patient had a family history of tuberculosis nor had had a previous disease which might be attributed to the tubercle bacillus. Since operation both patients have been perfectly well.

DR. BEYEA.—This case also brings up the question of tuberculosis of the genital tract. I would like to ask Dr. Anspach what observations he has made of the Fallopian tubes and uterus microscopically in this condition.

DR. ANSPACH.—Although I do not know the exact number of cases of tuberculosis of the tubes we have had, I should imagine a percentage about that given by Williams—nearly eight per cent. We have only had one case of tuberculosis of the endometrium; none of the cervix nor of any other part except the tubes. The tubes, of course, are the most common site of tuberculosis in the genital tract. I have not seen a specimen of tuberculosis of the ovary, except one Dr. Beyea brought to the laboratory; in that case the condition was secondary to tuberculosis of the tubes.

DR. BEYEA.—In 1895-6, at the University Hospital in the service of Dr. Penrose, in making a systematic microscopical examination of all the tubes and ovaries removed, I found 18 per cent.

of all inflammatory cases of the Fallopian tubes to be tubercular in character.

You will remember Hegar's paper published in '86 describing as the characteristic symptom of tuberculosis of the Fallopian tube, small nodules at the uterine cornu or along the isthmus of the tube. He is able to palpate the nodules through the abdominal wall and make the diagnosis. During my early experience in tuberculosis of the Fallopian tubes I ran across but one of those cases in which there was nodular or multinodular change in the Fallopian tube. All the other cases had the characteristic changes of an ordinary case of chronic salpingitis. There was sometimes a case of pyosalpinx. During the last two or three years, however, most of the cases have been of the other character, with small nodules along the course of the tube and particularly at the uterine horn. In making a diagnosis, with the absence of history of tubercular infection and of indications of gonorrheal inflammation of Bartholin's glands and of the cervix, particularly in women in whom you could not suspect gonorrheal infection, with a mass on each side or with inflammatory disease near the uterus, I suspect tuberculosis.

I have seen only four or five cases of tuberculosis of the ovary. Many of these women are young, and it is very important that the functions of ovulation and procreation should be preserved. Therefore, I have not felt when the ovaries were normal that it was wise to do hysterectomy. An operation which I have recently been carrying out is that of salpingectomy. I have done this in one case recently, and in one two years ago. Also in tuberculosis of the endometrium I have left the uterus in position. Two years have elapsed since the first operation and the woman has gained markedly in weight and has remained perfectly well. The endometrium has been converted into cicatricial tissue. We all know that the treatment of tuberculosis of the peritoneum is abdominal section with drainage or without drainage and that for some reason inexplicable the tuberculous process disappears. For the same reason I have done this more conservative treatment for tubercular tubes, and in no case have I had a return of the disease. I have found that in almost none of the cases has the disease been secondary disease. In all of the early cases, those reported by Hegar and Richter and many by Whitridge Williams, there was primary tuberculosis of the lungs and secondary tuberculosis of the Fallopian tubes. In most all of the cases I have seen the tubercular disease has been primary in the genital tract, first in the uterus and then in the ovary. In one case in which Dr. Norris assisted me there was peritoneal tuberculosis with probably secondary tuberculosis of a large ovarian cyst. I would like to know the experience of some of the other gentlemen upon the treatment of these cases, whether they have remained free from infection afterward. All the cases I have seen have remained free.

DR. ANSPACH.—I remember a case of Dr. Clark last year, a

young girl, 19 years old, who developed the symptoms of an abscess in the pelvis. She was operated on and both Fallopian tubes were found to be enormously distended and filled with pus. They were removed. Both the ovaries were allowed to remain, although they were covered with adhesions and looked as if they might subsequently become diseased. For about six months there was a discharge, but the incision finally healed, and at the present she is in perfect health. She has no pain, menstruates regularly and is doing well. Histologic examination showed the disease to have been tubercular.

DR. BROOKE M. ANSPACH (by invitation) presented

A CASE OF ADENO-MYOMA OF THE UNDEVELOPED HORN IN A UTERUS BICORNIS.

The specimen was removed by Dr. Noble from a patient at the Kensington Hospital. At first sight it appears to be simply a fibroid uterus with the largest nodule on the left side, subperitoneal and pedunculated. Upon a closer examination of the specimen the left tube and the left utero-ovarian ligament are found to be inserted into the summit of this nodule, which histologic examination shows to be an adeno-myoma. Upon opening the supposed uterus we find an endometrial cavity tubular in shape, leading directly from the cervix to the origin of the right tube. Embedded in the muscular tissue about the endometrium are a number of fibroid nodules in which there are no glandular elements. In short, we are dealing here with a single uterine horn containing simple fibro-myomata. The left horn of the uterus is represented by the adeno-myoma, which is connected to the cervix by a solid pedicle, 1 cm. thick. That the adeno-myoma actually represents the left uterine horn is indicated by the insertion of the left tube and the left utero-ovarian ligament into the summit of the tumor.

The precise position of the round ligaments cannot be determined from the specimen, although one can readily see that the left round ligament certainly did not spring from the inner side of the adeno-myoma. The left tube is of the same length as the right and perfectly normal in appearance. From these facts it seems justifiable to regard the specimen as an adeno-myoma of the rudimentary horn in a uterus bicornis.

There are two points of interest in this specimen to which I would briefly ask your attention. One concerns the etiology of uterine malformation, the other concerns the etiology of adeno-myoma. Malformations of the uterus have been explained on various grounds. You will remember that the uterus is formed by the union of the distal parts of the two Müllerian ducts. A persistent reduplication of peritoneum between these ducts, known as the ligamentum recto-vesicale, is found in some cases of uterus bicornis and undoubtedly sometimes produces the deformity.

Paltauf believes the failure of the Müllerian ducts to unite results from a persistent embryonal position of the tubal ends, *i.e.*,

they remain for an abnormally long time high up in the abdominal cavity close to the kidney.

Thiersch thinks an extreme size of the Wolffian bodies, in whose lateral borders the Müllerian ducts run, may prevent normal fusion of the latter. He says also that an unusual width of the trunk may have the same result.

Meyer considers two causes to be operative: first, hypertrophic round ligaments which hold the Müllerian ducts away from one another and produce uterus bicornis; second, an abnormally thick division wall between the two ducts, after they have fused, which persists and leads to double uterus.

Pick described two cases of double uterus in which a myoma was blamed for the deformity. There are at least 7 cases in the literature in which uterine malformation was associated with myoma or with adeno-myoma. In this specimen we have both. If we ascribe the malformation to myoma we take for granted the congenital origin of some of these tumors. There is scarcely a doubt that most adeno-myomata are congenital. Fibro-myomata are apparently also congenital in many instances. While infrequently found at birth or before the age of puberty, it is likely that the inactivity of uterine growth before this period accounts for their persistence as embryonal rests until the uterus enters upon its functional activity.

The second standpoint from which this tumor is both interesting and suggestive bears upon the origin of adeno-myoma. According to von Recklinghausen, a large majority of these tumors originate in separated portions of the Wolffian body, which become included within the Müllerian ducts. On the other hand, Kossmann would attribute most of them to the Müllerian ducts themselves and Cullen has demonstrated that many of these tumors when situated in the uterine wall, spring directly from the endometrium. Undoubtedly adeno-myoma may originate from both sources, from which one in a given instance can be determined by histologic examination.

While the displaced glandular elements have recently been regarded as the original source of adeno-myoma, the glandular growth being accompanied by proliferation of its investing muscular strands, we may ask from the conditions noted in this specimen whether an embryonal fibroid tumor may not in its early growth prove the active source of displacement of the glandular elements of the Wolffian or Müllerian tracts, resulting in adeno-myoma.

It seems striking that associated with the developed horn of this uterus we should find simple fibro-myoma, while the undeveloped horn is represented by an adeno-myoma.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

The President, EDWARD MALINS, M.D., F.R.C.P., in the Chair.

Meeting of July 6, 1904.

FIBROIDS AND CARCINOMA OF THE BODY OF THE UTERUS.

DR. LEWERS showed this specimen removed by pan-hysterectomy from a patient 45 years of age. A lump had been noticed in the abdomen for six years. For two years there had been a constant vaginal discharge, but no severe loss. Pain in the lower abdomen had been quite a recent symptom. On vaginal examination a blood-stained offensive discharge was seen issuing from the os uteri. The vaginal portion was normal. The sound passed eight inches. At the operation, the body was removed with the intention of leaving the cervix. But on cutting through the cervix at the level of the internal os, malignant growth (which had not previously been suspected) was found in the lumen. The cervix was consequently removed. Dr. Lewers urged the advisability of opening up the body of the uterus immediately after removal in all cases where fibroids existed, for, in his experience, malignant growth in the endometrium is not very rarely a complication of uterine fibroids.

DR. HERBERT SPENCER preferred total hysterectomy to amputation for fibroids, both on account of the possibility of malignant disease, either coexisting or appearing subsequently in the cervix, and also on account of the difficulty in some cases of distinguishing between fibroids and cancer at the time of operation. To perform the operation in two stages by cutting through the cancerous uterus at the level of the internal os entailed greater risk of local implantation of cancer than if the uterus were removed entire.

DR. AMAND ROUTH did not consider that cancer was relatively so frequent in fibroid uteri as in cases where no fibroids were present. He regarded metrorrhagia after the menopause in a woman known to have had a fibroid as strong presumptive evidence of cancer having developed. In such cases he advocated pan-hysterectomy.

DR. GALABIN thought that fibroids predisposed to cancer and that in all cases of fibroids in which continuous or irregular hemorrhage could not otherwise be cured in a moderate time, the uterus ought to be removed. Though he agreed with Dr. Spencer in regarding pan-hysterectomy as involving no greater risk than supra-vaginal hysterectomy, he did not advocate pan-hysterectomy in all cases. He reserved that operation as a rule

for parous women if the cervix were lacerated or inflamed or showed edematous hypertrophy or any other lesion. In single or nulliparous women, he thought that, if supra-vaginal hysterectomy were performed, there was no appreciable risk that the cervix, if healthy at the time of operation, would afterwards become affected by cancer.

MRS. SCHARLIEB regarded pan-hysterectomy for fibroids as the best operation both for immediate and for remote results.

DR. LEWERS, in reply, said that he thought it best in operating for fibroids to leave the cervix, if healthy at the time of operation. He considered that by unintentionally leaving also a small portion of the mucous membrane of the body of the uterus, the patient had slight monthly losses and suffered much less, or not at all, from the disturbances incidental to the production of an artificial menopause.

ABNORMALITIES OF THE POSTERIOR FONTANELLE.

DR. A. W. SIKES showed three skullcaps of children illustrating variations of the posterior fontanelle.

DR. BOXALL remarked on the frequency with which deviations from the normal type of posterior fontanelle occurred.

FIBROMYOMA ASSOCIATED WITH CYSTIC DISEASE OF THE SAME OVARY.

DR. WALTER TATE showed this specimen removed by operation from a patient 71 years of age. For two years there had been pain and progressive enlargement of the abdomen and occasional vaginal hemorrhage. The tumor consisted of two distinct parts; a solid portion the size of a fetal head which appeared to grow in the wall of the cystic tumor, and a cystic portion, the wall of which was inflamed and lined by lymph. The solid portion proved to be a fibromyoma with necrotic changes towards the centre.

MR. ALBAN DORAN referred to a similar case which he had published.

NECROBIOTIC UTERUS ASSOCIATED WITH RECENT PREGNANCY.

MR. ALBAN DORAN and DR. H. WILLIAMSON showed this specimen removed four weeks after delivery from a patient aged 38. An exploratory operation was made during pregnancy, but when the abdominal wall was cut through down to the peritoneum, the movements of the child were so evident all over the abdomen that it was decided to close the wound as there was nothing about the situation of the tumor to interfere with labor at full time. The patient had a perfectly normal labor. Three weeks afterwards the patient got up and in the night had a violent attack of pain referred to the epigastrium. The symptoms simulated those associated with axial rotation of an ovarian cyst. The pain subsided after resting, but the swelling continued tender with some elevation of temperature. The uterus was amputated a little above the cervix. The tumor proved to be a

fibroid situated in the anterior wall of the body of the uterus. On section the surface was red and fleshy-looking and the consistence soft and jelly-like.

DR. AMAND ROUTH alluded to a case of necrobiotic change in a fibroid due to axial rotation of its pedicle at the fifth month of pregnancy. Rapid enlargement took place. The symptoms were acute and consisted of shock, severe pain and vomiting. The fibroid was removed and the patient recovered without disturbance of the pregnancy.

MR. BUTLER-SMYTHE referred to the difficulties attending the diagnosis of the conditions present in Mr. Doran's case both during pregnancy and also before the second operation.

DR. FAIRBAIRN remarked that, though pregnancy appears to have some influence in the causation of necrobiotic changes, it cannot be the only factor, for it sometimes occurs in patients who have never been pregnant. And that it is not due to labor and to the changes during the puerperium is shown by its frequent occurrence early in pregnancy.

MR. DORAN, in reply, remarked that he had operated on many cases where there had been no pregnancy. Two of the patients were neurotic spinsters, one of whom had been laid up for nearly twenty years after a railway accident.

FIBROMA OF THE OVARY.

DR. FRANK E. TAYLOR showed this specimen removed by Mr. Bland-Sutton from a sterile married woman aged 50, who complained of severe dyspareunia of many years' duration. The right ovary showed no sign of disease. The tumor sprang from the outer pole of the left ovary. It is more or less pedunculated, densely hard and lobulated, with a smooth and glistening white surface. It measures $2\frac{1}{8}$ by $1\frac{3}{4}$ inches and weighs $2\frac{1}{2}$ ozs.

DR. FAIRBAIRN agreed that this was probably an example of the rarest form of ovarian fibroma, springing from the tunica albuginea and not from the ovarian stroma.

The specimen was referred to the Pathological Committee.

MR. M. S. PEMBREY and G. BELLINGHAM SMITH presented

FIVE FETAL SACS FOUND LYING FREE IN THE PERITONEAL CAVITY OF A RABBIT.

They were 7 or 8 cm. in length, 4 or 5 cm. in width, and 2 cm. in thickness. The largest contained four fetuses, the development of which showed that they were at full term. The sacs were formed of the fetal membranes thickened by fibrinous exudate; the placenta can be seen, but its maternal surface has been covered over by a similar deposit. The amniotic fluid has been absorbed, and the fetuses are compressed.

The abdomen of the mother showed well-marked signs of former peritonitis, but there was no evidence of placental attachment. The uterus, on careful examination, showed evidence of

a former rupture in the shape of an old scar at the junction of the two uterine horns.

The fetuses had evidently been retained for at least eight months before the animal was killed, for during the time she was kept in the laboratory she produced four normal litters. The rupture was probably caused by the impaction of the four fetuses which were found in one sac, and which showed signs of torsion.

The case supports the view of Mr. Bland-Sutton that such fetal sacs are not due to extra-uterine pregnancy but to rupture of the uterus and extrusion of the sacs into the abdominal cavity.

DR. AMAND ROUTH remarked that no such cases were observed in women, because if the uterus ruptured at or near full term, the fetus escaped through the rent without its membranes. He was surprised however that these changes had not been observed in some of the cases of tubal abortion where the entire ovum escaped into the peritoneal cavity. The only cases he knew of, where such fibrinous covering was seen, were in cases of entirely detached sub-peritoneal fibroids, and where pseudo-cyst walls were developed round secondary abdominal gestations.

ACUTE INVERSION OF THE UTERUS: SPONTANEOUS REPOSITION.

DR. ROBERT BOXALL recorded a case in which complete inversion followed traction on the cord after a normal delivery in a young primipara. The uterus was pushed back into the vagina. An unsuccessful attempt at reinversion was made within a few hours and again 48 hours after delivery. Some retained portions of placenta and membranes having been removed and the parts cleansed, it was decided to defer any further attempt for a few weeks. Douches were used night and morning. Six weeks later the uterus was found to have regained its normal position. It seems probable that this occurred during the third week, as at that time there was a certain amount of abdominal pain, free red discharge and pyrexia for a few days which could not be otherwise accounted for. The extreme rarity of spontaneous reinversion and the action of the douche as a factor in causing reposition were remarked upon.

DR. GALABIN said that he had not invariably found it necessary to wait for involution of the uterus in all cases in which attempts at reposition were unattended with success in the acute stages. He had found it quite practicable to restore the uterus with Aveling's repositer about a week after delivery in a case where there was a good deal of sanguineous discharge continuing. But for this purpose, as the uterus was still large he had a special cup constructed. Reduction was completed within 48 hours.

DR. HERBERT SPENCER had seen a similar case of spontaneous replacement of an inverted uterus. Others had been recorded, although its possibility had been denied by some. He was generally in agreement with Dr. Boxall's remarks. If a recently inverted uterus could not be replaced, he thought it better to wait

for two or three weeks, and he considered it especially bad practice to endeavor to replace the uterus while its mucous membrane was in a septic condition. In his own case a midwife had left the uterus inverted with a large piece of placenta and membranes attached for three weeks. He removed the putrid placenta and membranes and employed continuous irrigation with boric acid solutions. Under this treatment, the fundus gradually receded and in a few days passed within the cervix, and finally was completely reduced under the influence of the irrigation only. He thought it possible that the gentle continuous pressure of a stream of water would reduce a chronic inversion. A suggestion had been put forward that in cases of *sudden* reduction a violent effort forcing down the vagina and its attachments to the cervix, might reduce the inversion by causing the round and outer ligaments to pull up the fundus. He considered that successful treatment by Aveling's repositor depended largely on an accurately fitting cup and upon a stem with a proper curve.

DR. BOXALL, in reply, said that he was so much impressed with the necessity of using an accurately fitting cup that in two cases he had first made a mould of the inverted fundus, using for that purpose a bar of hard soap. From that model a cup was shaped out of pitch pine. When applied this accurately fitting cup adhered by suction to the inverted fundus and was thus prevented from slipping. Being made of soft wood, the cup was much more easily removed from the uterus after reinversion was effected, because it could be seized, and, if necessary, broken up by forceps with greater ease than a cup made of ebony or vulcanite. In one case he had seen much damage done by Aveling's repositor in attempting reduction a fortnight after delivery, the patient nearly losing her life from hemorrhage following the attempt. For that reason he preferred to wait till involution was well advanced.

REVIEWS.

THE PRINCIPLES AND PRACTICE OF GYNECOLOGY. For Students and Practitioners. By E. C. DUDLEY, A.M., M.D., President of the American Gynecological Society; Professor of Gynecology, Northwestern University Medical School; Gynecologist to St. Luke's and Wesley Hospitals, Chicago, etc. Fourth Edition. Revised. Pp. 771, with 419 illustrations in colors and monochrome. Lea Brothers & Co., Philadelphia and New York, 1904.

A new edition of this thoroughly practical work is most welcome. It is admirably adapted for the use of students by the arrangement of the subject material and by the conciseness and clearness of presentation. As in the last edition, the diseases are grouped in natural pathological sequence instead of the affections of each individual organ being considered separately. The various infections and inflammations are thus logically treated in sequence and similarly various traumatism, malformations, tumors, etc., are grouped together. The etiology, symptoms, diagnosis, etc., are placed as heretofore in tables, instead of being run together in the text; differential diagnosis, too, is shown in parallel columns. These features, with a judicious use of capitals and full-faced type, makes the reading and study of the volume particularly easy. The matter of illustration is well done, but not over done. Practical manipulations and operative procedures are clearly shown in this manner, thus adding to the value of the book to the practitioner. In only a few instances have cuts been inserted with the obvious purpose of beautifying the paper and relieving the monotony of printed matter, such as two uninstructional diagrams showing a calculus and a new hairpin within the bladder. The volume, as a whole, shows itself to be the work of a man of practical experience, and is sound and, in general, conservative. A word of caution might well be inserted in a number of instances considering that the treatment advised is presented for the consideration of students as well as those of perhaps limited experience. For example, under the treatment of amenorrhea we read, "The occasional use of the intra-uterine sound or dilator may stimulate the menstrual flow." Such an unqualified recommendation by such an authority might be held up in defense of the conduct of cases of amenorrhea in which abortion had followed. In considering the replacement of the adherent retroverted uterus it is stated that "adhesions and contractions may be stretched or broken" by manipulations, and the method is illustrated. No caution is added as to the effect upon diseased adnexa or of the damage which might be done by tearing adhesions out of the control of vision. An agreeable feature in the work is the small number of personal case reports and

reminiscences. The volume justifies its claim to be for the use of both students and practitioners, a claim more often made than substantiated.

H. D.

A TEXT-BOOK OF DISEASES OF WOMEN. By CHARLES B. PENROSE, M.D., Ph.D., Formerly Professor of Gynecology in the University of Pennsylvania; Surgeon to the Gyncecan Hospital, Philadelphia. Pp. 550, with 225 illustrations. Fifth Edition. Revised. Philadelphia, New York, London: W. B. Saunders & Company, 1904.

Intended for the use of students, simplicity of style and of contents characterize this work. Major operative gynecology is absolutely subordinated and is relegated to the end of the volume, which is devoted chiefly to diseases of the genito-urinary tract. Theoretical discussions, case reports, autobiography of the author and other pleasing diversions with which many of the large text-books of the day are padded are conspicuous by their absence. Many of the cuts are diagrammatic, but serve their purpose as well as more modern and elaborate illustrations. The least favorable feature of the work is the typography, the book being difficult to refer to on account of the lack of easily visible headings and sub-headings. Anatomy, pathology and physiology have been omitted. The restriction to one plan of treatment for each disease may be advisable in that it simplifies the subject for students, but it emphasizes the fact that this is distinctively a text-book, not a work of reference for the practitioner.

A HANDBOOK OF PATHOLOGICAL ANATOMY AND HISTOLOGY. With an Introductory Section on Post-mortem Examinations and the Methods of Preserving and Examining Diseased Tissues. By FRANCIS DELAFIELD, M.D., LL.D., Emeritus Professor of the Practice of Medicine, College of Physicians and Surgeons, Columbia University, New York, and T. MITCHELL PRUDDEN, M.D., LL.D., Professor of Pathology and Director of the Department of Pathology, College of Physicians and Surgeons, Columbia University, New York. Seventh Edition. Pp. 885, with 13 full-page plates and 545 illustrations in the text in black and colors. New York: William Wood and Company, 1904.

The preceding edition of this work was quite fully reviewed in the issue of this journal for November, 1901. The book retains the general characteristics mentioned at that time. The crying need for a new edition arose from the publication of Ehrlich's side-chain theory soon after the appearance of the sixth edition. and the elaboration of this theory by others since that period. The section on immunity has, of necessity, been entirely rewritten. The remainder of the work has been revised, where changes seemed advisable, by Dr. Prudden and his laboratory colleagues, while nearly a hundred illustrations have been added.

THE AMERICAN YEAR-BOOK OF MEDICINE AND SURGERY FOR 1904. A Yearly Digest of Scientific Progress and Authoritative Opinion in all Branches of Medicine and Surgery, drawn from journals, monographs, and text-books of the leading American and foreign authors and investigators. Arranged, with critical editorial comments, by eminent American specialists, under the editorial charge of GEORGE M. GOULD, A.M., M.D. In two volumes. Volume II, General Surgery. Pp. 680, illustrated. Philadelphia, New York, London: W. B. Saunders & Co., 1904.

This volume maintains its usual standard. A feature which adds greatly to the value and interest of the work of this character is the presence of remarks by the author introductory to the individual abstracts, conveying to the reader in a few words the present status of the subject about to be discussed. This is found to any appreciable extent only in the sections on obstetrics and gynecology, the rest of the volume being practically a collection of abstracts. The preface states that a special endeavor has been made to place at the head of each chapter a summary of the more noteworthy advances during the year. The summary referred to is found before only one of the seven sections of the current work. It is to be hoped that this suggestion of the editor will be carried out in succeeding issues in order to assist the reader in making an intelligent selection of abstracts for perusal. Abdominal and orthopedic surgery are included in this volume.

CLINICAL URINOLOGY. By ALFRED C. CROFTON, M.D., Professor of Medicine, Chicago Post-Graduate Medical College and Hospital; Physician-in-Chief to St. Mary's Hospital; Pathologist to St. Luke's Hospital. Pp. 298, illustrated. New York: William Wood & Company, 1904.

Written with the express purpose of filling the borderland between the laboratory and the clinic, this volume is a treatise upon the physiological chemistry of the normal and abnormal urinary constituents and their clinical significance as well as a guide to their qualitative and quantitative determination.

BRIEF OF CURRENT LITERATURE.

GYNECOLOGY AND ABDOMINAL SURGERY.

Association of Ovarian with Uterine Fibro-myomata.—Frank E. Taylor (*Edin. Med. Jour.*, June) finds from reviewing the literature that fibroid tumors of the ovary existing alone or unassociated with uterine fibroids may form large tumors which give rise to symptoms of clinical importance. When ovarian and uterine fibroids exist the former are generally small and merely of pathological interest. Occasionally the ovarian tumor becomes larger and torsion of its pedicle is then liable to occur.

Complications Arising from Freeing the Ureters in the Radical Operations for Carcinoma Cervicis.—John A. Sampson (*J. H. H. Bul.*, April) finds that the ureter passes through tissue which should be removed in every instance of hysterectomy for carcinoma of the cervix as shown by : (1) The large percentage of recurrences after hysterectomy; (2) the renal insufficiency resulting from compression of the ureters by extension of the disease; (3) the accidental injury to the ureters in the operation; (4) the proximity of the cervix to the ureters and the relation between the two may be greatly altered under physiological conditions by steps in operations and by pathological processes; (5) Kundrat has shown that the parametrium was involved in 44 of 80 operable cases, and that in half of these cases the parametrium was able to check the further progress of the disease; (6) a study of the parametrium in those cases in which the ureters have been resected shows that it takes but very little involvement by direct extension or metastases for the growth to reach or extend beyond the ureters and that the presence of this growth can be diagnosed only with the microscope. The pelvis portion of the ureter lies in a sheath which protects the ureter and its periureteral arterial plexus and is derived from tissue through which the ureter passes, and on this account the isolation of the ureter with the sheath is very difficult. On the other hand, the sheath may be split open and the ureter easily shelled out. The effect of freeing the ureter from its sheath manifests itself in the opportunity for partial or complete ureteral obstruction resulting from kinking or imbedding of the ureter in adhesions and also in circulatory disturbances resulting from injury to the blood-vessels, and may present the following conditions: (1) Injuries to the larger branches of the ureteral plexus, where the smaller branches are able to enlarge and maintain the nourishment of the ureters, and thus preventing necrosis; (2) venous congestion due to injury of the larger veins, causing distension of the deeper ureteral veins which anastomose freely with each other; (3) necrosis of the ureter which may or may not give

rise to an extravasation of urine, depending on the extent of the injury and whether or not the ureter becomes imbedded in adhesions. Necrosis of the ureter apparently begins as a hemorrhagic infarct and the inner coats of the ureter are the parts first affected. In the early stages hemorrhage with necrosis is noticed first in the tissues beneath the epithelium. The outer fibrous ureteral coat becomes greatly thickened unless it also becomes necrotic. The effect of necrosis is a stricture due to swelling caused by the necrotic tissue. This stricture may be temporary or permanent, depending on the severity of the process, or the necrosis of the ureter may be so extensive as to cause complete occlusion of the ureter with loss of function of the kidney. Rupture of the ureter may occur, leading to an extravasation of urine, which may become encapsulated, if infected lead to renal or pararenal infections, or other localized or diffuse infectious processes. When the urine finds an outlet through the vagina or abdominal incision a ureteral fistula is formed, which is the usual manifestation of ureteral necrosis. Ureteral fistulæ may heal spontaneously, but probably always with a stricture, and frequently with renal infection, which may cause death. Frequently they persist long. In some cases they close, causing occlusion of the ureter. The most important etiological factor in the causation of ureteral necrosis is injury to the periureteral arterial plexus. Other causes are ligation of the vessels supplying the plexus, exudates, infection, destruction of the tissue about the ureter, pressure on the ureter, stricture below the injury and lowered general resistance.

Appendicitis.—C. F. Burnam (*J. H. H. Bul.*, April) reports four unusual cases of appendicitis. One case considered from its history and clinical course in conjunction with the pathological findings was undoubtedly a case of primary actinomycosis. Another case was primary carcinoma, while still another was primary tuberculosis of the appendix. The fourth case was tuberculosis of the appendix, but probably not primary.

Incipient Ovarian Tumors.—Alban Doran (*Jour. Obst. and Gyn. Br. Emp.*, May) draws attention to the fact that an ovarian tumor may, in its earlier stages, before it has risen above the pelvic brim, be both painful and tender. He reports several cases to support this statement. The symptoms are conspicuous by their absence in patients of any age with small ovarian tumors. In these cases evidences of inflammation were for the most part absent and displacements of the uterus were the exception. The painfulness of a small ovarian tumor is of advantage as it betrays the presence of a new growth.

Amenorrhea Associated with Serious Eye Symptoms.—J. E. Gemmell (*Jour. Obst. and Gyn. Br. Emp.*, April) cites the case of a girl, age 16, whose menstrual periods were normal up to the time she went to boarding-school, when they ceased. In about one month she suddenly became blind in one eye. At the end of three months she was practically blind in both. This

blindness was caused by hemorrhages into the vitreous. She was at this time put on treatment to bring on her periods and at the present time has regained the sight of one eye. The prognosis as regards the eye in this condition is not favorable, but if the menstrual period is not re-established it becomes still more grave, as repeated hemorrhages may cause permanent damage.

Ovarian Cysts.—Frank E. Taylor (*Practitioner*, May) believes it is impossible by mere macroscopic examination to distinguish between benign and malignant cysts. Every cyst should be examined microscopically. Every ovarian cyst should be removed with the least delay after its discovery, because of the uncertainty of its nature. They should be removed entire without being tapped or punctured, and during the operation of ovariectomy the ovarian pedicle should be ligated as far as possible from the diseased tissue.

Backward Displacement of the Uterus.—Thomas W. Eden (*Practitioner*, May) finds that when symptoms are caused complications are usually present. Before adopting local treatment the possibility of the symptoms being hysterical should be considered. Pessaries should only be employed as a temporary measure. Local depletion is a valuable adjunct to treatment by pessaries. When the latter fail to cure or the case is unsuitable for this line of treatment we should advise ventro-fixation.

OBSTETRICS.

Retroversion of the Gravid Uterus.—G. Ernest Herman (*Br. Med. Jour.*, April 16), in looking over the clinical history of this condition finds that the sole danger in the fourth month comes from its action as a cause of retention of urine and hence of cystitis, peritonitis, rupture of the bladder, pyemia and uremia. There is no evidence that retroversion of the gravid uterus produces any ill effects upon the organ itself. The only necessary treatment is catheterization. The catheter must be used early and often until the uterus rises into the abdominal cavity and the bladder and urethra have accommodated themselves to their altered positions. When the uterus does not spontaneously go up it is better to push it up by pressure in the vagina or rectum, first emptying the bladder. The majority of cases thus treated will go to term and natural delivery take place.

Depressed Fracture of the Skull Caused During Birth.—Andrew B. Ross (*Br. Med. Jour.*, April 16) reports a successful operation for depressed fracture of the skull which was performed twenty days after birth. He made an incision through the scalp and bone just external to the anterior fontanelle and parallel to the left coronal suture. By means of an angular periosteum elevator he was able to replace the bone. The operation was practically subcutaneous and could easily be done immediately after birth without fear of infection in cases where the depressed bone cannot be raised by other means.

Eclampsia.—T. Arthur Helme (*Br. Med. Jour.*, May 14) advances the theory that eclampsia is due to increased cerebro-

spinal tension. The headache, dizziness, irritability and sudden blindness, the clonic, tonic and tetanic spasms, the stupor and coma, all point to increased intracranial pressure. To relieve the pressure he suggests tapping the spinal cord in the lumbar region and drawing off one to one and a half drams of fluid. He has tried this on one case with very satisfactory results.

Premature Labor.—According to G. E. Herman (*Clin. Jour.*, May) premature labor is brought on (1) as a prophylactic to save the child, to prevent difficult labor, and to check hemorrhage; (2) as a curative measure, as a means of saving the mother in diseases of the heart and kidneys it is demanded when the compensation becomes insufficient, causing dyspnea, edema and hemoptysis. In chronic diseases of the kidneys which do not improve under rest and a milk diet premature labor may be required to prevent puerperal eclampsia. It may also be of value in diabetes, leukemia, pernicious anemia and acute yellow atrophy of the liver. It is of doubtful value in chorea and insanity. Premature labor to save the life of the child is employed in those cases in which for some reason unknown the child dies at a particular date in pregnancy. This information is obtained from the history of the previous pregnancies. This procedure is of value to avoid difficult labor when the pelvis is too small or the child too large, and to prevent hemorrhage in placenta previa. When the diagnosis of placenta previa has been made labor should be induced at the earliest possible time. Premature labor is best brought about by separating the membranes or by inserting bougies and then leaving the bag of membranes to dilate the uterus. But if the uterus is inactive it is best to dilate the cervical canal with tents, Hegar's dilators, or the fingers, and then to insert a Champetier de Ribes's bag. There is no greater risk to the mother in premature labor than at full term.

Tubal Pregnancy.—John W. Taylor (*Br. Gyn. Jour.*, May) cites a case of tubal pregnancy which ruptured on the nineteenth day after conception and ten days after the uterus was curetted. He was able to ascertain the exact date of coitus which occurred just nineteen days previous to the rupture and eight days before the patient menstruated. The curettage was performed at the cessation of the period, which lasted one week, on account of a hypertrophic endometritis which had existed for some time and had previously been treated by curettage. The tubal pregnancy was removed as soon as possible after it ruptured and the patient recovered.

DISEASES OF CHILDREN.

Congenital Hypertrophic Stenosis of Pylorus.—(*British Journal of Children's Diseases*, Jan., 1904.) Dr. Edmund Cautley says it is almost justifiable to speak of this as a new disease, for it has attracted very little attention until recent years. In almost every case it was noted that the child was "a fine baby." First symptoms may come on a few hours after birth or not for a month or more, usually appearing in the second or third week.

Vomiting is the most important and characteristic symptom and until it begins there may be no indication of anything wrong. There may be flatulence or constipation. Vomiting is not accompanied by nausea. Two or three feeds may be kept down and then apparently the whole lot is brought up at once. Gradually vomiting becomes more frequent and may occur on administration of smallest quantities of food. Vomiting is forcible as seen in older children. It causes pain, but babe is most comfortable when stomach is empty; its character depends on diet. There is no bile present. In late stages there may be mucus in it. Constipation may be present; it depends upon the amount of stenosis. There may be diarrhea with small stools, resulting from irritation from decomposing or unsuitable food passing through the pylorus. The tongue is clean and the breath sweet in typical cases. Inspection of abdomen reveals no signs of intestinal obstruction. Usually there is evidence of gastric dilatation and visible peristalsis which may be induced by tapping the epigastrium or applying a cold finger. On the other hand, dilatation of the stomach and visible peristalsis may occur without stenosis of the pylorus of this nature and the stomach is necessarily dilated in the earlier stages of this affection. The pylorus can usually be felt on careful palpation, about half an inch to the right of and three-quarters of an inch above the umbilicus, deeply seated and feels about the size and shape of a filbert. The condition of the child in late stages is that of marasmus, due to starvation. Diagnosis based on history of progressive wasting, vomiting increasing in frequency and characteristic of pyloric obstruction, constipation, clean tongue, sweet breath, dilatation of the stomach, visible peristalsis, and the presence of a tumor. It must not be mistaken for the simple regurgitation of food so common in infants, or for simple gastric catarrh. There are also cases of pure pyloric spasm leading to death from persistent vomiting—cases in which no hypertrophy of the pylorus is found at autopsy. Possibly operative treatment is the most appropriate measure in these.

The anatomical condition, found post mortem, is a simple but extensive hypertrophy of the circular muscular fibers forming the pylorus. The stenosis is not complete for it is easy to pass a probe through. In life the folds of mucous membrane complete the obstruction.

The prognosis is very bad unless operative measures are adopted. It is possible that there are mild cases which may be sufficiently relieved by careful diet, rectal feeding, and by gavage and lavage. There is little doubt that some of the cases of hypertrophic stenosis in older children are simply a persistence and amplification of the infantile condition. Choice of operation lies between pyloroplasty and Loretta's operation, in which the pylorus is simply stretched. Theoretically there is no possibility of recurrence after pyloroplasty, for the circular muscular fibers are fully divided. If the affection has been diagnosed there is nothing to

be gained by waiting, and the chance of life is small under all other methods of treatment.

C. T. Dent (*British Journal Children's Diseases*, Jan., 1904), from the four operative cases he has had, comes to the conclusion that pyloroplasty is the best operation that can be performed for the relief of this condition. He believes that gastro-enterostomy as applied to these patients is but a palliative makeshift.

That the operation at an early age is difficult should not deter from operating. His youngest case was thirty-four days old. The first case was fifty-one days old at time of operation. It had been a first child, bad labor, forceps delivery. It weighed, at birth, seven pounds. Fed by hand from birth. Symptoms commenced ten or twelve days after birth. The child was soon satisfied, then the characteristic vomiting commenced—three or four feeds might be kept down, then the accumulated stomach contents were violently ejected. At operation child weighed an ounce or two over five pounds, having lost two pounds since birth. A thickened pylorus had been felt, gastric peristalsis was evident occasionally. The abdominal wall was excessively thin and peritoneum almost burst open when exposed. The pylorus was at once felt and drawn up in the wound. The thickening involved the pyloric antrum partially, but extended also some way down over the commencement of the duodenum. The thickening was nearly an inch in length, and the tumor had the usual white appearance seen in these cases. Stomach was not dilated. Pyloroplasty was performed. A longitudinal incision about an inch and a quarter in length was made through the thickened tissues from the stomach down to the duodenum. The hypertrophied muscle was about half an inch in depth, and gave the characteristic creaking sensation as it was divided. There was absence of submucous thickening and the mucous membrane was very pale. The operation became easier directly the opening was made in the stomach and a little gas escaped. At the upper and lower extremities of the incision the mucous membrane was united to the stomach and duodenum respectively to prevent crumpling up of the mucous membrane and consequent obstruction when the pyloroplasty was completed. The central, the most important stitch, was closed first; there may be considerable drag on this stitch at first owing to the action of the longitudinal muscular fibers of the stomach. If, however, this stitch is closed up rather slowly the drag can be overcome without any risk of the stitch cutting through. When once closed there is no fear of its giving way. The best form for central stitch is a Halsted's suture. The remaining sutures came together satisfactorily. Five sutures in all were put in. No food was injected into the duodenum at the time of the operation. An omental graft appears unnecessary and likely to lead to after trouble. The operation from commencement to time child was replaced in bed occupied twenty-five minutes. The anesthetic is a highly important factor in these cases. Rectal feeding for first twenty-four hours, small quantities of hot water by mouth. If

rectal foods are not well retained food may be given by the mouth after twelve hours or so, if it is thought necessary, but some blood is vomited after the operation; and as long as there is blood in the stomach the food will not be retained. Next day the child took its food, peptonized milk and water, by the mouth fairly well. Two days later the vomiting had ceased and it was evident that the passage through the pylorus was patent. Temperature was high, though the wound gave no trouble. The child was kept back by diarrhea due to enteritis. The after treatment was directed to improve the enteritis. The weight of this child was not equal to its weight at time of birth until it was nineteen weeks old. Four months after the operation it looks well and happy and weighs ten pounds.

As yet we do not know enough of the after history of cases operated on in infancy to justify us in assuming positively that a permanent cure is effected. The first recorded instance of an operation done for congenital hypertrophic stenosis in infancy dates only from four years ago.

Some Clinical Features of Trachoma.—Herbert Wright Wootton (*Archives of Pediatrics*, May, 1904) says there seems to be no doubt as to the contagious character of this disease and also as to certain racial and probably personal predispositions. It is not contagious through the medium of the atmosphere, but is to a fairly marked degree through the medium of the secretions.

In the service of the Trachoma Hospital four physicians and five nurses contracted the disease in spite of all known precautions. However, it must be admitted that the entrance of trachomatous secretion in a healthy eye does not necessarily result in trachoma.

Hebrews and Irish are especially liable to trachoma. The negro is stated by many authors to be practically exempt. This is not true in institutions in this climate. The admixture of white blood in these cases may have diminished the negro's natural immunity.

As we see it here it is almost always a chronic affection interrupted by acute exacerbations. Its inception is fairly acute and is accompanied by lachrymation, injection of the ocular conjunctiva, and often by slight ptosis. It may remain unilateral for some time. A persistent unilateral conjunctivitis with watery rather than mucopurulent discharge is exceedingly suspicious of beginning trachoma. In a few days small follicles may be distinguished, especially in the lower cul-de-sac. Later the irritation gradually subsides, the disease takes on a chronic character and its true features become apparent. In the opinion of the physicians at the Trachoma Hospital two things are necessary for its diagnosis at the commencement of the quiescent stage, *i.e.*, the presence of follicles (the trachoma granules) and the presence of hypertrophy of the mucous membrane.

Diagnosis.—It may be confounded with follicular conjunctivitis. The follicles of follicular conjunctivitis rarely, if ever, involve the upper lid. They are small, in parallel rows in the lower

lid and are unaccompanied by conjunctival hypertrophy. In the quiescent stage, the early diagnosis may be difficult. But in such a case, if we evert the upper lid and find small, deep-seated follicles studding the conjunctiva of the tarsus, we may be certain that trachoma is the disease with which we have to deal.

During acute exacerbations treatment is best conducted by one of the silver salts. Argyrol in 20 per cent. solution is most generally serviceable. When the disease is quiescent treat it by local applications or by surgical procedures. Of the local applications the sulphate of copper pencil is the best. In about ten thousand cases treated at the Trachoma Hospital it proved to be greatly superior to either bichlorid of mercury or formalin. The results obtained with the two latter seem to me to be due to the friction employed.

Results of treatment by the sulphate of copper crayon are good, particularly in cases presenting a preponderance of large superficial granules. It is tedious and painful and cocain does not seem to alleviate the smarting to any marked degree. In surgical procedures I favor simple expression without previous scarification, and judging by six thousand cases treated by operation I believe that Knapp's roller forceps is the best instrument to employ. When the follicles are superficial Noyes' or Prince's forceps answers very well, but when deeply-seated the stripping action of these instruments necessitates too much traumatism. Knapp's forceps is more difficult of manipulation and is not so readily used in the canthi; here, however, the follicles are superficial and the Prince forceps can be used to complete the operation. The after treatment is best conducted by the early removal of the bandage and the use of ice cloths. In the service of the Department of Health the present custom is to remove the bandage at the end of a few hours. The continuance of the bandage for twenty-four hours increases the tenacity of the resulting adhesions. Separate the adhesions daily with a probe until their tendency to reform shall have ceased.

The result of operative treatment depends largely upon the patience and thoroughness of the operator, and the more thorough he is in removing the granules the greater the subsequent reaction and the more numerous and persistent the adhesions in a difficult case. The point of primary importance, however, is to remove the granules; reaction can be subsequently combated.

After reaction has subsided, any follicles remaining are to be treated with sulphate of copper, and this treatment should not be discontinued until conjunctival hypertrophy shall have disappeared.

The Reduction in the Tubercular Death-rate in Children in New York City.—Hermann M. Biggs (*Archives of Pediatrics*, May, 1904) says there can be no question that the factor of so-called heredity in the causation of tuberculosis, the frequent recurrence of cases in the same families in the same and

succeeding generations, is largely to be explained through house infection.

In a family in which a case of pulmonary tuberculosis in the infectious stage exists, an infant from the very earliest moments of life is seriously exposed to danger of infection. During the first year the exposure is through the breathing of air containing bacteria suspended in it in the form of dust, transference of tubercle from the sick person by kissing, or from food transferred from mouth of mother to infant.

When a little older, when creeping on the floor, it is exposed to a greater extent, especially in apartments in crowded tenement-house districts; the hands are soiled from expectoration on floor, or the dust from the floor, or objects near floor are transferred, with the tubercle bacilli directly to the mouth of the infant. It may also inhale dust which is raised by movements of persons in the room.

Another possible infection is through the use of infected eating and drinking utensils and the taking of milk from tubercular cows.

The infant in an infected family is much more exposed than any other member of the family. There is little danger that the child will be sufficiently exposed outside of the family to tubercular disease to acquire infection until after it is four or five years old. The preventive measures adopted in New York City for the last ten or twelve years, and which consist chiefly in the provision of hospital accommodation for advanced cases of consumption, in the disinfection of apartments vacated by removal or death, and in the education of consumptives and of their families as to the nature of the disease and to the proper disposal of expectoration, should result in a lesser degree of house infection and should be followed by a lower death-rate from the tubercular diseases in the early periods of life.

To determine what influence, if any, the preventive measures have had, Biggs had collected data in regard to the deaths from pulmonary tuberculosis and tubercular meningitis under fifteen years of age for a period of twenty years.

These data show that during the ten-year period ending in 1902 there had been a decrease of more than 40 per cent., and that in a period of twenty years the decrease has considerably exceeded 50 per cent. in the death-rate from pulmonary tuberculosis and tubercular meningitis in children under fifteen years of age. In 1892 the death-rate was 5 per 10,000, and in 1902 it was 2.96.

The Necessity for an Early Diagnosis in the Prevention of Deformities.—Reginald H. Sayre (*St. Louis Medical and Surgical Journal*, May, 1904) says that if, in a case of congenital talipes equinovarus, proper manipulation to correct the deformity is begun at birth and retention in the improved condition be maintained, it is rare for the deformity to be present when the child is old enough to stand.

In infantile paralysis, we find one of the largest fields for preventive surgery. Children who have been afflicted with paralysis

of any sort should be most carefully watched, and if any tendency to deformity is observed, proper means should at once be taken to hold their growing bones in as nearly a normal position as possible until they have become ossified.

If torticollis is allowed to remain uncorrected for a number of years, in consequence of the patient's constant efforts to adapt himself to the crooked position of the head, there is certain to be distortion of the face which is apt to be permanent, and frequently a lateral curvature of the spine in its lower part is caused by efforts to twist the face straight.

Whenever a mother brings a child for examination because its body does not seem to her to be quite normal, you may be almost sure that she is correct, and before you give an opinion to the contrary take time to strip the child and examine it at your leisure.

In lateral curvature there is an apparent elevation of one hip. Careful measurement will probably show that both legs are of equal length, and the iliac crests are at equal distances from the floor, but the twist in the lumbar spine and the change in the position of the ribs have altered the contour of the waist so as to produce the appearance of an elevated hip.

Another place in which the commencement of a lateral curvature is often noticed is the space between the body and the arms, as the latter hang by the sides. If these spaces are not symmetrical, look the patient over with great care, for something is sure to be wrong.

The scapulæ give warning early, and if either one looks more prominent than its fellow, or not on the same level make the patient bend forward with the arms drooping toward the floor and examine the contour of the ribs. In front, the distance of the nipples from the umbilicus should be noticed and also the comparative size of the breasts.

Shortening of one leg is often a cause of lateral curvature.

In Pott's disease of the spine the disease is present months and sometimes years before the deformity, and gives rise to such marked symptoms that its presence can only be overlooked through inattention. The diagnosis may often be made from observing the attitude of the patient; the careful gait, anxious look in the eyes, drawn expression of the mouth, stiff carriage of the head on the trunk, and shortened respiration proclaiming the presence of vertebral inflammation. If the disease is situated in the cervical region the attitude may resemble that of torticollis but may be differentiated from it by the muscular spasm and pain on movement, and is usually accompanied by slight rise of temperature. In the upper thoracic region we find usually elevation and rigidity of the shoulders, and in both places the lesion is accompanied by a peculiar sharp, grunting respiration. When in the lower thoracic region we see the peculiar position of the head which is thrown back as far as possible, till the face looks directly upwards, sometimes, in order to remove the weight from the front part of the vertebral bodies and transfer it to the transverse proc-

esses. Also we see the contraction of the abdominal muscles which gives the appearance, as if a string were tied around the body.

The pains in Pott's disease are almost always referred to the distal extremities of the nerves which leave the spine at the point of the inflammation, rarely in the back, hence these patients are often treated for worms, colic, indigestion and stone in the bladder for months without any suspicion that the trouble is in the spine.

In a question of diagnosis between Pott's disease and lateral curvature of the spine, if there is a slight increase in temperature or any suggestion of muscular spasm, err on the safe side, treat it as Pott's disease and protect it from motion until time has cleared up the diagnosis.

As in inflammation of the spine so in hip-joint disease it is rare for the patient to complain of pain in the hip at first. Usually the pain is referred to the knee, a branch from the obturator nerve, which also supplies the hip joint terminating there. Pain is often referred to the large toe. Another early diagnostic point is the presence of spasm in the muscles of the calf on the affected side.

The earliest manifestation of joint inflammation is probably the involuntary spasm of the muscles controlling the joint; it is doubtful if inflammation is ever present without this symptom. It is the first to appear and last to subside, and as long as it is present the joint requires protection. To examine a patient in whom disease of the hip joint is suspected remove all clothing. Almost the first symptom that will be noticed after time has been allowed for the patient to relax the muscles, will be that the weight is borne largely on one leg, the other being slightly flexed at the hip and knee; the leg will also be slightly abducted and rotated slightly outward. As the disease progresses these deviations from the straight line become more marked, but later on, if the joint capsule has been ruptured, may be replaced by adduction instead of abduction, and an apparent shortening instead of lengthening of the affected limb. The buttocks afford a means of diagnosis, that on the affected side being lower than its fellow and the gluteo-femoral crease not so well defined.

After examination in the standing position the patient should be placed on the back on a table or on the floor. A bed will not answer. The back should be placed so that the spine touches the table throughout its entire length and the pelvis so that a line through its anterior superior iliac spines will be at right angles to a line passing through the center of the sternum, umbilicus and symphysis pubis. Grasp the sound leg firmly and the thigh flexed on the abdomen as far as possible, it should be abducted, adducted and rotated, the patient being urged to relax all the muscles, observing the range of motion. Do the same with the lame leg and note any limitation of motion as compared with the sound side. If there is inflammation of the joint there will be restriction of motion and muscular spasm. If there is contraction of the psoas muscle, it will be impossible to bring this leg flat on the table

without causing tilting of the pelvis, and it may be impossible to bring the legs in a straight line with the trunk without disturbing the relative positions of the interiliac line and the line through the center of the body.

The fact that pain is not caused by these motions does not bar out the presence of inflammation in the joint. If the disease has progressed to such a point that slight movements of the joint give rise to pain much valuable time has been lost.

Another complaint most unsatisfactory to treat is sciatica when it results from tuberculosis, or other diseases of the lumbosacral and sacroiliac articulations. The attitude of a patient with inflammation in the sacroiliac synchondrosis is typical and serves to differentiate the case from hip-joint disease. The body is bent away from the affected side, and a peculiar twist given to the spine that must be seen to be appreciated.

The knee is the seat of many kinds of inflammation. Whenever there is slight synovitis in a knee, and especially when the traumatism has been but trivial, be on your guard. Immobilize the knee and put the patient on crutches, or, if it is a child who cannot be trusted to use them, apply a splint that will prevent motion, and keep the weight from the joint.

A New and Simple Method for Obtaining the Sputum in Children.—Leonard Findlay (*Archives of Pediatrics*, February) employs the following method for obtaining the sputum in children, which has been used for years in the French hospitals. With a piece of gauze on the forefinger, the pharynx, and especially the epiglottis, is irritated so as to induce coughing, and any expectoration that is coughed up is swept out of the mouth with the finger before it has time to be swallowed. Several attempts may require to be made; but even in children as young as six months sufficient has been obtained on which to found a diagnosis. This method has been practiced as a routine measure during the last nine months and with gratifying results. Many cases of not very well marked tuberculosis of the lungs were diagnosed early, even on the day of admission to the hospital, and, with only one exception, no case of pulmonary tuberculosis went to post-mortem examination without the tubercle bacillus having been found in the sputum at some time. In cases of meningitis also, supervening on local pulmonary mischief, where there was a doubt as to it being tuberculous or pneumococcic in origin, the finding of the tubercle bacillus in the expectoration removed after the above manner cleared up the diagnosis.

The Treatment of Tracheotomy Wounds in Diphtheria.—A. Ernest Jones (*British Journal of Children's Diseases*, April, 1904) says: Tracheotomy wounds in diphtheria usually heal up readily, being impervious to air after five to eight days, and quite sound in from ten to fourteen days. Certain conditions prevent this, and the results of nonunion are extremely serious, both as regards the child's health and general welfare. A sinus left for six months after tracheotomy is very different to cure, the attempt

involving great peril to the child's life; and the child grows up in most cases an inarticulate being, with all the tremendous drawbacks to such a condition. There are the trouble and risk attached to the permanent tube and increased liability to bronchitis and other respiratory infections. Those who have seen much of these cases report that they suffer more than other children from bronchitis, but are less susceptible to pulmonary tuberculosis.

It is highly important to endeavor to obtain early union of the wound as soon as possible after its *raison d'être* the relief of obstruction has been fulfilled. The chief conditions which militate against this early union are:

(A) Continued presence of obstruction in the glottis. 1. Mechanical obstruction, due to organic changes in the vocal cords. These changes may be either a primary cicatrization, due to the diphtherial lesion or a secondary one, due to the irritation of intubation or other mechanical interference. It is obvious that while present this condition is an absolute bar to the closure of the wound.

2. Obstruction of nervous origin, due to spasmodic contraction of the cords. This is rarely a sufficient cause in itself to prevent healing, but it is an important factor in conjunction with other conditions. It can, as a rule, be diagnosed by the relief obtained by the administration of chloroform, and also by the fact that the obstruction is often purely an inspiratory one.

(B) Various conditions in the wound. 1. If the larynx be injured in the operation the wound often gives great trouble in the course of healing.

2. Slight septic infection of the wound is a deterrent rather than an absolute bar to union.

3. The character of the tracheal opening may exercise an important influence on closure of the wound. Thus, if the upper end of the opening be not cleanly incised at the time of operation, it sometimes happens that a portion of the antero-lateral wall of the trachea is able to fall back and act as a flap valve, partly shutting off the larynx. Again, if the wound be not median, and the tracheal wall be weakened by inflammation, it occasionally happens that the anterior wall falls back on to the posterior wall from its own weight whenever inspiration occurs, constituting another variety of flap valve. Therefore, the local condition of the wound should always be carefully inspected under a good light, so that such occurrences, if present, may be detected.

The main lines on which treatment of tracheotomy wounds should be based are the following:

1. Keep the wound as aseptic as is possible. It should always be covered with a double layer of aseptic gauze, which can be conveniently fastened at one corner to the sternum either by a spot of collodion or by a strip of Unna's zinc strapping. This is changed as frequently as necessary. It conduces to cleanliness of the wound and general comfort if the clothing be cut well away

in a *décolleté* fashion and made to open back and front. Sterilize all instruments and mops involved. This is essential.

2. The tube should be removed at as early a date as possible, more especially if any of the laryngeal cartilages be injured. One can usually take out the silver tube after twenty-four hours, and if another tube be required later on for a few hours more a rubber one should be inserted.

3. Every effort should be made to calm and reassure the child, and in some cases the administration of bromide of potassium is of use.

4. The only contra-indication to the use of heroic measures if the wound does not spontaneously close is a septic and dilated heart.

Infantile Colic.—Alexander McAllister (*Pediatrics*, October, 1903) says:

Trivial circumstances in the life of the mother may excite an attack of colic in the tender nursling. An irregularity in her diet, her physical activity or her mental equilibrium may be the sole cause of an attack or repeated attacks of colic. On the other hand, lack of cleanliness in the nursing bottle or nipple, too rapid, too frequent or too long deferred feeding in the artificially fed are common causes of colic. The hose and nipple equipment of nursing bottles cannot be too strongly condemned. They cannot be kept sufficiently clean and hygienic. They are always of too immediate service for the infant's best welfare. Nature has wisely designed that the tenderest infant shall labor for its sustenance. In the normal amount of labor expended to secure the breast milk the salivary glands are stimulated and the milk reaches the stomach well mixed with saliva. Rubber nipples are more easily plied than fleshy nipples, are patulous and yield milk with little labor on the part of the infant and after several nursings become soft and admit of a veritable stream with little effort. Therefore, infants prefer rubber nipples, and when they have had one for a short time will not return to breast nursing. I recommend only the bottle nipple, restrict the use of any one to two weeks and order the employment of two nipples that one may lie in an alkaline cleansing wash while the other is doing service. As a rule an attendant should always hold the bottle while the infant is feeding to avoid the evils of too rapid feeding.

Pain in the very young may result from soreness incidental to birth, griping accompanying the earliest movements of the bowels, urinary retention caused by phimosis, renal colic and kindred incidents in the establishment of normal functions. In older infants earache, teething, soreness in the abdominal muscles, tender joints due to rickets and other painful maladies must be considered. The signs of colic are well known but require more or less physical examination; they are: hardness of the abdomen, palpation of coils of intestines, tendency of the infant to draw up the legs and the expulsion of flatus accompanied by vigorous crying. Cessation of

crying after the passage of flatus is always a sign of proper diagnosis.

In the treatment of infantile colic too careful circumspection in the use of drugs cannot be practiced. The tendency to use the soothing syrups of the shops needs no encouragement. Many cases can be relieved by a little manipulation of the infant, with or without gentle massage of the abdomen. Many cases of so-called colic are simply flatulency, or, in nursery parlance, "wind on the stomach." In all such cases manipulation is the only legitimate treatment. The family physician may not infrequently render the highest service by instructing the mother or nurse how to jump an infant, abdomen down, in order to secure relief from colic. Next the remedy of greatest value is warmth. This may be applied to the abdomen dry or moist, or employed internally in the form of sips of hot water, or of hot enemas. Friction with warm oil along the line of the colon is of special value combining warmth with manipulation. The most unique means for applying warmth in colic is a small hot water bag. They may be utilized in very young infants with satisfaction, and the infant will fall to sleep with the bag resting on the abdomen. It cannot harm and is decidedly beneficial also in improving digestion and nutrition. Some cases in older infants in spite of all require medication with carminatives. The standard teas prove too weak. The formula of paregoric with opium excluded makes a remedy of considerable value. Rotch recommends administering carminatives with alkalies between feedings to counteract the high degree of acidity of the stomach always present, especially in bottle-fed infants. The following is one of his favorite prescriptions:

R	Sodii bicarb	40 grs.
	Spts. Ammon. Arom	40 m.
	Glycerini	30 m.
	Aqua Menth. pip. . . q.s. ad.	2 ozs.

Sig. One teaspoonful between feedings.

When acidity is not an element requiring special treatment lac asafetida is frequently of value. The use of narcotics in the treatment of infantile colic is only exceptionally justifiable.

Intussusception with Cure by Sloughing.—Irving M. Snow (*Arch. of Ped.*, July) reports a case of sub-acute intussusception in a baby of seven months, with illness of sixteen days, the symptoms simulating ileocolitis; on the sixteenth day protrusion of gangrenous intestine from the anus; removal of six inches of necrotic bowel protruding beyond the sphincter ani; recovery. He concludes with a list of four recorded cases of intussusception in babies, a year old or less, terminating in recovery by gangrene and elimination of the intussusception.

Epidemic Cerebrospinal Meningitis.—J. J. Walsh (*Arch. of Ped.*, July) recalls that it has been noted by many that there seems to be some inscrutable connection between pneumonia and cerebrospinal meningitis and says that this observation is exem-

plified in the recent epidemic in New York City as there have never been more cases or more serious cases of pneumonia than during the present spring. The most interesting problem about the disease is the manner in which it spreads. It does not act like a contagious disease in the ordinary sense of the word, for the contact of new cases with preceding cases cannot be traced with any degree of certainty, and the disease seems to break out here and there, without any definitely traceable relation always to former cases. The fact that the disease is almost surely due to Weichselbaum's diplococcus intracellularis would seem to indicate the possibility of its transmission from person to person where proper antiseptic precautions are not taken. The decision of the Department of Health to consider it an infectious disease, so that the pupils in whose family a case exists are not allowed to go to school, is amply justified, and no other policy could with safety be followed. Where doubt exists lumbar puncture constitutes the only sure way of making a differential diagnosis. As this method represents what is probably the best therapeutic measure that we have, besides aiding in diagnosis, its use should not be limited as much as it is to hospital practice. The injection of lysol in one per cent. solution has seemed in some hands to bring relief of symptoms, in others none at all. It is well worth trying in severe cases. All agree that opium must be freely used to relieve severe pain. The prognosis is always uncertain. Severe cases may suddenly change for the better and get entirely well. Mild cases may suddenly have a turn for the worse with a fatal issue, or with a long standing coma as a result and then unfortunate enduring sequelæ.

Importance of Early Aural Examination in Acute Diseases of Children.—James F. McKernon (*Arch. of Ped.*, July), at the meeting of the American Medical Association, emphasized the importance of frequent otoscopic examinations during the acute diseases of childhood, so that the presence of any pathologic conditions might be early recognized and treated. In young children suffering from the acute exanthemata an aural complication should be looked for each day. In a large number of cases there was no symptom pointing to an aural condition until after the damage had occurred; namely, a spontaneous rupture, with destruction of a portion of the drum membrane, which might easily have been avoided had otoscopy been practised frequently. Ear complications should also be looked for in acute gastrointestinal conditions, pneumonia, grippe, acute follicular tonsilitis and typhoid fever. He said that he never used a spray or douche in the nose or nasopharynx. He advocated paracentesis in every case of bulging of the drum, and in a certain number of cases he would make the incision without waiting for the bulging.

THE AMERICAN
JOURNAL OF OBSTETRICS
AND
DISEASES OF WOMEN AND CHILDREN.

VOL. L.

NOVEMBER, 1904.

No. 5.

ORIGINAL COMMUNICATIONS.

RETRODEVIATIONS OF THE UTERUS; A RÉSUMÉ OF THEIR
SURGERY.¹

BY

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It would certainly seem very ungrateful should I not express my thanks for the honor the members of this Association have conferred in electing me to the presidency, a distinction that came unexpectedly and unsolicited. Well should I feel proud of the honor when I realize that this Association stands as a peer among bodies of its character in this country. The character of the work that has been done at least equals in quality and quantity that of any other like organization. From among its membership have been chosen presiding officers of nearly all the leading societies of the United States. It would be idle to assume that there is any other reason for this, aside from that of fitness. This preparedness comes from the thorough training of these men in their daily work, as well as from the debates and the production of thoroughly scientific papers that have appeared from year to year in the transactions of this organization.

¹Presidential address at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists at St. Louis, Mo., September 13-16, 1904.

When we realize that our productions are read and accepted, and, in many instances adopted as a rule of practice by specialists, we should be stimulated to maintain the standard of work to which we have aspired from the beginning of our existence. Among the subjects that have been most thoroughly discussed and the teachings accepted as the most rational, are appendicitis, the management of inflammatory diseases of the uterine adnexa, gall-bladder surgery as elucidated by our late and lamented Fellow, Dr. W. E. B. Davis, restoration of the female perineum, and the various operations for the relief of the retrodeviated uterus.

In casting about for a subject upon which to address you I have selected the latter. The chief reason for this is that of all the cases that present themselves to the gynecologist, they are the most common. It would probably not be an exaggeration were I to state that two-thirds of the work that falls into the hands of the busy gynecologist is of this character. A minority are uncomplicated, while a majority are, or have become, almost unmanageable, and often demand surgery of the adnexa plus surgery to relieve the retrodeviation.

It is not my purpose to speak at length as to the etiological factors that more or less remotely enter into the consideration of the condition, but rather to speak of the excellent operative work that has been accomplished within the past fifteen years, so that what I may have to say is in the nature of a résumé of what has been done surgically to relieve it. I believe the future has yet in store for us the most rational and perfect operation, and, that so far, however laudable may have been our efforts, we have not arrived at the acme of perfection.

METHODS OF OPERATION.

The different methods of accomplishing the reposition of the uterus may be classified according to the route selected by the advocate of each. They may be divided into three classes, namely, extraperitoneal, vaginal, and intraabdominal.

CLASS I.—Extraperitoneal, according to Alexander, Alexander-Adams, Goldspohn, Longyear, and others (the Alexander operation), was first performed by Alexander, of Liverpool, December 14, 1881, and reported January, 1883. It consists in shortening the round ligaments through the inguinal canal. The objections that have been offered to this operation are, first, that it is applicable only to uncomplicated cases, where there are no fixations and no lesions of the adnexa. Second, hernia is apt to

follow, as is also sloughing of the parts involved. These objections have been greatly removed by our Fellow, Dr. A. Goldspohn, who dilates the internal abdominal rings, and through this dilated opening frees the adhesions, inspects the adnexa, and, if necessary, removes diseased ovaries and tubes.

The Alexander-Adams operation dates from 1886, and consists of an incision parallel to Poupart's ligament, 5 cm. long, ending on the spine of the pubis. This incision goes as deep as the aponeurosis. Imlach's fat indicates the external inguinal ring, which is brought to view. The round ligaments are separated on both sides. An assistant brings the uterus into anteversion, the round ligaments being pulled and shortened for 8 to 10 cm. The ligaments then are sewed to the external inguinal ring.

Some operators incise the whole inguinal canal. Others do not remove parts of the round ligaments, but fold them and sew them on the aponeurosis and soft parts. Others, again, fix the round ligaments along the whole length of the inguinal canal. Cassati makes the incision above the symphysis, crosses the round ligaments and sews them on the subcutaneous tissue. Kocher pushes the round ligaments, after they have been pulled out, under the median skin-bridge and sews them there. German gynecologists prefer the Alexander-Adams operation in these cases.

The method of Rumph, with modifications by Flaischlen, consists in an incision 1 cm. above the symphysis and Poupart's ligament, through the skin, the fat of the mons veneris and the fascia superficialis. The bleeding is controlled, and at the lateral wound-corner dissection of the aponeurosis of the external oblique muscle is made. The fat tissue is pushed backward in the median direction toward the tubercle of the pubis. In doing this the external inguinal ring comes into view. The inguinal ring is now incised laterally for 3 to 4 cm. The round ligament lying in the inguinal canal is now carefully isolated with a blunt instrument. Rumph then pulls the round ligament and separates with the finger the white peritoneal funnel from it. This is done on both sides. By pulling both round ligaments the uterus is felt against the abdominal wall. Both ligaments are now fixed by a silkworm gut suture in the lateral wound-corner of the aponeurosis, and are further fixed by sutures of silkworm gut or catgut at the inside of the aponeurosis. From the lateral end of the round ligaments 8 to 10 m. is removed and the wound is then closed.

From 1898 to 1901, 212 operations for retroflexio-uteri were done in the clinic for female diseases at Berlin—namely, 98 ven-

trofixations, 90 vaginal operations, and 24 Alexander operations. Of these operations 155 were done in connection with other operations (62 ventrofixations, 82 vaginal fixations, 6 Alexander operations). Fifty-seven of the operations were done only for retroflexio-uteri (36 ventrofixations, 3 vaginofixations, 18 Alexander operations).

During the same time 23,348 patients were treated, of which 2,335 (10 per cent.) had retroflexio-uteri; so that the operation for retroflexio-uteri was done only in 10 per cent. of the patients suffering from this trouble, as shown by the following table:

	1898	1899	1900	1901
Ventrofixation only.....	14	11	6	5
Ventrofixation with other operations....	16	26	10	10
Alexander-Adams only.....	2	5	7	4
Alexander-Adams with other operations.	0	1	3	2
Vaginofixation only.....	1	2	0	0
Vaginofixation with other operations....	5	21	26	35

Ventrofixation was most frequently done when tumors, perityphlitis or inflammatory conditions of the adnexa were present. The Alexander-Adams method is more and more done in uncomplicated retroflexions and retroversions.

The details of the technic are simple, and begin with shaving the field and a warm bath on the evening before the operation. General anesthesia is advisable. Slight adhesions of the uterus, if present, are removed or loosened after the method of Schultze, or by operative procedure in the vagina. The patient is placed in the horizontal position. Operation: locate external inguinal ring a little above and lateral to the tubercle of the pubis; from this point an incision 6 to 7 cm. long is made, about 2 cm. above and parallel to Poupart's ligament. (Kocher makes an incision 15 cm. long to the anterior superior spine of the ilium. Kummell's incision is 12 cm. long.) Bloodvessels are caught and tied, especially the external spermatic vessels and superficial epigastric, which go over the field of operation. Then the movable layers above the fascia of the external oblique muscle are cut. The fascia is dissected with a blunt instrument, especially in the corner of the symphysis. The external inguinal ring is felt as a triangular hole near the tubercle of the pubis, where the inferior border of the external inguinal canal is attached. Imlach's deposit of fat may serve here as a guide.

In opening the inguinal canal, bring a closed surgical forceps from the inguinal ring into the canal, spread it, cut with a scissors the roof of the canal for about 3 cm. parallel to Poupart's ligament. The edges of the fascia are fixed with forceps. The contents of the canal are now caught near Poupart's ligament with a forceps and drawn outward. A second forceps is brought deeper and catches the round ligament. The first forceps serves as a dissecting instrument. Fixed in an artery forceps the round ligament is pulled out for 10 to 12 cm., and isolated from the tendon and muscle fibers. The peritoneal funnel is now seen, which is to be pushed backward from the thicker part of the round ligament with a blunt forceps. Resection of 8 to 10 cm. of the round ligament follows between two forceps. The central end is now fixed in the direction of the round ligament in the inguinal canal. In doing this the ligament is pulled up. A catgut suture catches Poupart's ligament, one-third of the diameter of the round ligament, and the edge of the aponeurosis of the external oblique muscle. Next the canal is now closed by three to four sutures through the internal side of Poupart's ligament, through the round ligament, and through the internal oblique muscle. A circular ligature is applied to the short piece of the round ligament and it is returned to the inguinal canal. The roof of the fascia is closed with catgut sutures, closing also the external inguinal ring.

Before closing the skin one or two layers of deep sutures are made through the fascia superficialis and fat. Drainage is not necessary. Cover with aseptic gauze and do the same procedure on the other side. The wound is covered with iodoform gauze, adhesive plaster and bandage. Dr. Peters did this operation on forty patients with no death and no return.

CLASS II.—Via vagina, according to Mackenrodt, Wertheim, Ries, Gottschalk, Pryor, Koblanck, and Dürhssen. Wertheim makes an opening in the anterior vaginal fornix, and through this opening he brings the round ligament and stitches it to the edges of the vaginal opening. It is dangerous because the work is done through the vagina. Ries, of Chicago, 1901: through an opening in the vaginal fornix he exposes the fundus uteri and through a slit on the anterior surface of the uterus pulls the round ligaments from opposite directions and fastens them in this position. Gottschalk opens the posterior vaginal fornix and shortens the uterosacral ligaments. As the cervix was raised up the fundus must necessarily fall forward. Its usefulness is doubtful. Pryor made

an incision transversely in the posterior fornix and then packed gauze in the cul de sac of Douglas, and in this manner pushed the fundus forward, when adhesions form, thus holding the uterus in place. Dangerous on account of sepsis from the vagina.

Vaginal Fixation—Koblanck's Method.—The fundus of the uterus is caught and pulled downward; incision in and removal of a long oval from the anterior wall, pushing the bladder backward opening of the vesico-uterine fold from one side to the other; pulling forward the uterus with a finger or Muzenx's instrument; loosening the adhesions of the uterus, tubes, and ovaries. The insertions of the round ligaments are now sutured with a thick catgut thread. The end of the catgut thread is again brought through the eye of the needle and then the double thread is brought through the upper and lower part of the plica vesico-uterina. A fixation of the threads at the inside of the wall of the vagina about midway between the cervix and orifice of the urethra is made. The other corner of the uterus is fixed in the same way, and finally suture of the peritoneum and vaginal wall is made.

Intraperitoneal Fixation of the Uterus, Starting at the Vagina.—Sigmund Gottschalk does the operation as follows: the cervix is incised anteriorly at the insertion of the anterior vaginal wall; the bladder is separated from the cervix with the second finger; the bladder is then held back with a ligature through the anterior edge of the vaginal wound and with an anterior vaginal speculum; the plica vesico-uterina or the fascia comes to view, and is caught with two clamps and cut with scissors from right to left. This cut is enlarged at both sides until it has the length of the largest diameter of the corpus uteri. The peritoneum of the plica is divided by this incision into a larger anterior vesical part, and a smaller posterior uterine part. Both parts are caught at their right and left ends by clamps. The anterior clamps are pulled forward and the posterior backward. The corpus uteri is brought through the large oval-shaped hole so that the fundus comes forward. Adhesions are detached before by the method of Schultze. The operator pulls the vesical part of the plica downward by means of the clamps and stretches it out over the anterior wall of the corpus uteri. An assistant applies the uterine part of the plica in the same way. Horizontal sutures are now made through the corpus uteri (anterior wall) and the peritoneal parts of the plica. Three of these sutures are made within a distance of 1 cm., one from the other, starting the first one 1 cm. below the fundus uteri. When all are applied they are tied. After that the

vesical and uterine parts of the plica are united and the abdominal cavity closed.

Operation for Retroflexed Uterus.—A. Mackenrodt, 1888: This is first a resection of an oval from left to right from the anterior wall of the uterus at the height of the os internum uteri, after loosening the bladder; then opening the perineum; next suture of the uterine wound with the peritoneum, and finally suturing of vagina over the suture through peritoneum and corpus uteri.

The following modifications with dates when suggested are given: 1894, only the peritoneum of the bladder connected with the uterus—vesicofixation; 1898, vaginal fixation with opening of the peritoneum, moving the vesico-uterine cul de sac 1 to 1½ cm. higher, and fixing the vagina directly on the corpus uteri.

Mackenrodt's operation is performed as follows: catch cervix with two-bullet forceps, pull downward; catch anterior vaginal wall at the height of the os internum uteri; (1) cut through the stretched fornix vaginae to the cervix (length cut), (2) make a cut from right to left over the cervix (width cut); loosen the flaps; cut through the septum vesico-vaginae; push the bladder upward to the plica peritonei; open the vesico-uterine cul de sac from the right to the left; apply bullet forceps to the anterior wall of the uterus about 1½ to 2 cm. higher than the os internum uteri; catch the bladder peritoneal wound-edge with clamps and remove the bullet forceps from the cervix. The finger now pushes the cervix upward and the bullet forceps at the corpus uteri pulls this forward and downward. The bladder peritoneum is attached to the anterior wall of the uterus with one catgut suture, by which procedure the vesico-uterine cul de sac is closed below. Through the uterine wall just under this fold is brought a thick catgut thread, just under the point where the bullet forceps caught the uterine wall. The bullet forceps is now removed and applied at the anterior labium of the uterus and pulled downward. The opening in the vaginal wall from left to right is then closed, starting from the middle and going to both sides. The length-incision is still open, through which the thick catgut thread hangs out. At both ends of this thread is now attached a needle, one of which is brought through the vaginal wall to the left and the other to the right. Before tying this thread the length-cut is closed with catgut sutures, then the thick thread is tied. An iodoform gauze tampon is placed in the vagina, pushing portio backward.

T. A. Alexandroff's operation is done as follows: Specula in

vagina; uterus pulled downward; half oval incision, convex below, through anterior fornix vaginæ; flap dissected and with the bladder high up separated; apply Landau's speculum; ligamentum latum made free at one side and through the base of the ligamentum latum is brought a ligature to within about 3 to 3½ cm. from the cervix uteri. The finger is brought under the posterior inferior side of the base of the ligamentum latum. The fibers at the base of the ligament are caught with the ligature—altogether about 1 m. thick. The same is done at the other side. The uterus is brought into anteversion and released by the bullet forceps. The ligatures of both sides are now crossed and pulled in opposite directions by an assistant. The peripheral ends of the bases of the ligamenta lata come together at the anterior wall of the cervix uteri. There they are connected by two or three sutures, catching at the same time the tissue of the cervix. The fornix wound is then closed, and if necessary the spatium præveriale drained.

Dührssen's Method.—Years ago Dührssen operated as follows: First loosening parametric and perimetric adhesions after the method of Schultze; disinfection of external genitalia and surroundings with 1 per cent. lysol solution; same for vagina. A Simon's speculum is applied in the posterior vagina; the anterior lip of the cervix is caught with two-bullet forceps and the uterus irrigated with 1 per cent. lysol solution and then curetted; the bladder is pushed forward and upward with a male catheter; the cervix is pulled into the vulva; incision of 1 cm. is made superficially from right to left over the insertion of the anterior vaginal wall at the cervix; the upper wound edge is caught with a bullet forceps and pulled upward. The incision is now made deeper and to both sides 1 cm. larger. The fascia over the fornix vaginæ is cut and the left second finger separates the bladder from the uterus.

Then a probe, bent as a Fritsch-Bozemann's catheter, is brought into the uterus. The assistant brings the handle of this probe downward, and in doing this he brings the fundus uteri toward the second finger of the operator. Guided by this finger the operator catches the anterior wall of the uterus as high as possible with a silk ligature from left to right. This ligature is not tied, but strongly pulled downward by an assistant. If necessary a second, third and fourth ligature is applied in the same way higher up. By pulling these ligatures it is possible for the operator to apply three sagittal sutures through the anterior vaginal wall

and the uterine wall. These last three sutures are tied and the first applied ligatures removed. The wound from right to left in the fornix vaginæ is then closed with a catgut suture. After removing the uterine probe the uterus is washed out and the vagina tamponed with iodoform gauze. Nowadays Dührssen uses silkworm gut instead of silk, and brings this through the whole thickness of the vaginal wall. He removes this four to eight weeks after the operation. Besides, he has changed his method of suturing the vaginal wound in this manner—namely, that the wound is tied up in a horizontal direction, making the wound remainder sagittal, by which method the cervix is pressed backward.

CLASS III.—Intraperitoneal, ventro-suspension or ventro-fixation, either by apposition of uterine peritoneum to abdominal peritoneum, or suspension in one way or the other by the round ligaments, through an incision made through the anterior abdominal wall and into the peritoneal cavity, as practised and recommended by Olshausen, Kolbanck, Kelly, Alexandroff, Tod Gilliam and Dorsett. Ventro-suspension will always be connected with Olshausen, who first published an account of his operation in January, 1889. Kelly's operation consists in attaching the posterior surface of the fundus uteri to the abdominal peritoneum, thus forming a peritoneal suspension of the uterus. This procedure is hazardous in the extreme, on account of the danger of entanglement of the bowels in resultant adhesion bands. Palmer Dudley folds the round ligament and then stitches it to the anterior surface of the uterus. In Baldy's operation the round ligament is severed near its attachment to the uterus and the pelvic end is drawn through an opening in the broad ligament and stitched to the posterior surface of the uterus. Martin, of Chicago, described an operation, November 19, 1897, whereby he suspends the uterus by means of a ribbon of peritoneum taken from one side of the abdominal incision and stitched to the fundus of the uterus. The same objection is applicable to this operation. Fowler used the urachus to suspend the uterus. The same objection maintains. Tod Gilliam suspends the uterus by means of the round ligaments in the following manner: a sharp pointed forceps is pushed from without inward through the rectus muscle and its fascias and the peritoneum. Now the round ligament is grasped by the forceps and pulled through the opening and stitched to the fascia. Thus the round ligaments are used to support the uterus. Where the round ligament is not in a state of atrophy this is a most excellent operation.

Olshausen's operation, 1886—ventrofixation: the patient lies with the pelvis high; median incision is made and the peritoneum opened; if adhesions are present these are loosened; both uterine cornua are now fixed to the anterior abdominal wall with two to three sutures. The sutures are applied around the round ligament insertions and go through the parietal peritoneum and the muscles. After that the abdomen is closed by sutures in three layers. Leopold Czerny attached the anterior wall of the uterus just below the fundus to the anterior abdominal wall. Kaltenbach sought to eliminate the danger of secondary laparotomy and attached the fundus to the periosteum of the symphysis by a silver thread going through the periosteum, peritoneum and anterior wall of the uterus. Kustner makes a cross incision. The skin is incised from the left to the right above the symphysis; the muscles and peritoneum are cut in the linea alba and the uterus attached there. Noble's operation is a modification of this; so is Oviatt's. Fritsch attaches only the peritoneum of the uterus to the peritoneum of the abdominal wall. Byford folds the round ligaments anteriorly and stitches the loop thus formed to the abdominal wall at a point just above the internal abdominal ring. Mann's operation consists in folding the round ligament into the shape of the letter "N." He then stitches the edges together and thus secures extensive adhesions of a folded ligament. Czempin elevates the uterus with a peculiarly shaped probe and sews the fundus to the recti muscles without opening the abdominal cavity. This need only be mentioned to be condemned.

It may be of interest to here quote from an important dissertation which appeared in the *Berliner Medicinische Wochenschrift*, 1901, Vol. 38, pp. 579, 610: Ueber einige Beziehungen der Retroflexio uteri finata zu Schwangerschaft, Geburt und Wochenbett, von Dr. Franz Lehmann. Relation between Retroflexio Uteri Finata and Pregnancy, Labor and Puerperium.

Pregnancy.—A retroflexed uterus is sometimes the cause of sterility. If the woman becomes pregnant, most frequently abortion occurs; if not, there is great danger of the uterus becoming incarcerated. (This, according to my experience, is not true.) It may be that the adhesions grow longer, and that we are able to bring the uterus into the vertical position, or that spontaneously this position is regained, but this is rare. As reasons for spontaneous reposition of the uterus Lehmann gives, (1) hypertrophy of the round ligaments, which pull forward and lift the fundus uteri; (2) by the congestion of the uterus and adnexa the adhe-

sions become more soft and elastic and do not pull so strongly backward; (3) he thinks that the place where the ovum is attached to the uterus also has something to do with the spontaneous reposition, as this may change the equilibrium of the uterus; (4) the character and location of the adhesions may allow reposition; (5) contractions of the uterus during pregnancy seem to lift the uterus.

Labor.—When pregnancy comes to an end and labor sets in, as a rule the pains are very severe. Version and extraction of the fetus are advisable as soon as possible, as rupture of the uterus may occur.

Puerperium.—Danger: diseases of bloodvessels and thrombosis. Lehmann had in five cases, twice thrombosis of both venæ femoralis and once embolus in the pulmonalis. Thrombosis of the deep pelvic veins sometimes occurs.

When we realize that in the majority of instances we do not have retrodeviations of the uterus that are not complicated with inflammatory diseases of the adnexa it becomes apparent that the field for operative work, outside of the peritoneal cavity, is necessarily narrow. Many of these uncomplicated cases can be relieved of their sufferings by the use of the Albert Smith or Hodge pessary. While many patients of this class can and do wear pessaries for an indefinite length of time, it must not be assumed that the proper adjustment of a pessary necessarily condemns the patient to its use for the remainder of her life. Pessaries are particularly applicable to acute cases following labor.

It will be seen I have indulged in some criticism of the different methods of operating. I am constrained to do this for the reason that according to my belief they do not merit the prominence they have attained in the estimation of the profession at large, and for the reason that no man can arrive at a proper conclusion as to the best method of relieving the suffering woman without a careful study of the different methods. If one operation is in accord with the accepted idea of proper surgical technic, the other certainly is not. When we consider the great diversity of opinion as to which is right and which is not, without a proper appreciation of them all, we certainly are at a loss as to the choice of operations. In my opinion we should not consider any operation that does not contemplate the possibility of a thorough inspection of the adnexa from above the pubic bone. I would discard the entire class of operations that contemplate vaginal incision, either anteriorly or

posteriorly, on account of the greater liability of sepsis, as well as from the impossibility of anchorage to firm structures.

While ventrosuspensions and ventrofixations have been condemned as unjustifiable, it is because only the fixation or suspension that is accomplished by anteverting the uterus and stitching the fundus, or perchance, the posterior uterine wall, to the abdominal wall, have been considered. It is reasonable to assume that this unnatural suspension or fixation is a causative factor in the production of lengthened adhesion bands, which entangle the bowel and act as a barrier to the proper development of the pregnant uterus. If, however, a lower segment of the anterior uterine wall is attached lower down on the abdominal wall and the omentum is allowed to drop to or behind the uterine fundus, the bugbears of necessary Cesarean sections in labor cases and entangled bowel will be less feared. My own work in obstetrics and with this operation justifies this statement.

5070 WASHINGTON AVENUE.

TRANSACTIONS OF THE AMERICAN
ASSOCIATION OF OBSTETRICIANS
AND GYNECOLOGISTS.

*Seventeenth Annual Meeting, held at St. Louis, Mo., Sept. 13,
14, 15 and 16, 1904.*

*The Association met at the Monticello Hotel, under the Presi-
dency of DR. WALTER B. DORSETT, of St. Louis, Mo.*

ADDRESSES of welcome were delivered by DR. LOUIS E. NEW-
MAN and HON. DAVID R. FRANCIS, President of the Louisiana
Purchase Exposition.

Responses to these Addresses of Welcome were made by DR.
L. H. DUNNING, of Indianapolis, Ind., and Dr. HERMAN E. HAYD,
of Buffalo, N. Y. The reading and discussion of papers were
then begun.

ANTISTREPTOCOCCUS SERUM IN PUERPERAL SEPTICEMIA
AND SCARLET FEVER.¹

BY

ALBERT G. HAMILTON, M.D.,
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WHEN I announced the title of my paper for this meeting it was
my intention to give a brief history of the antistreptococcus serum,
from its discovery by Marmorek to the present day, together with
records of its successes and failures, and why its use has not been
attended with the same success accorded antidiphtheritic serum;
but in view of recent articles in the leading medical journals
touching this point, it seems unnecessary to discuss further the
subject so familiar to all. My paper, therefore, will deal ex-
clusively with cases coming under my own observation, in which
I shall endeavor to point out the indications for the use of this
serum, and to show that in selected cases its employment is at-
tended with as certain and definite results as that of its fellow, the
antidiphtheritic serum.

Since the discovery of serum for the treatment of diseases, the
various investigators have endeavored to demonstrate that all
diseases infectious in their nature could be made to yield to
an antitoxin, which, when injected into an individual affected with

¹Read at the Seventeenth Annual Meeting of the American Association
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such a malady, would produce a degree of immunity against the further action of the germs and, by inhibiting their deleterious effects upon the system, restore its normal functions. Theoretically, no one can deny the truth of their sayings, but practically experiments would tend to show that such is not the case. However, no one will deny that the present low mortality in diphtheria is due exclusively to the timely use of the antidiphtheritic serum, nor that many cases of sepsis have recovered by the use of the antistreptococcus serum. But why should such brilliant results attend the former, while innumerable failures or indifferent results the latter? It is certainly not on account of the greater resisting power of the streptococcus over the Klebs-Loeffler bacillus, for bacteriologists agree that of the two germs, the former possesses the least vitality. We must, then, look to other channels for the solution of this problem. Puerperal septicemia, or puerperal infection, is not, like diphtheria, a disease due in every instance to a specific germ, and therefore cannot be successfully combated in all cases by a serum having only a limited action.

It is true that the vast majority of all cases are caused by the streptococcus, but the staphylococcus, gonococcus, colon bacillus and various mixed infections may produce symptoms so similar that without a microscopical examination of discharges, a differential diagnosis cannot be made. In view of this fact, we cannot, therefore, regard this disease as amenable to any specific medication. Again, by way of comparison, we must realize that in this disease we are dealing with a septicemia, while in diphtheria the constitutional symptoms are due to a toxemia. In the former there is not only the absorption of the bacterial poison, but also the invasion of the bacteria themselves into the living tissues; while in the latter we have only to deal with the ptomaines produced by the bacteria.

In justice, therefore, to any measure advanced for the purpose of combating sepsis, we must be more lenient and, until the present serum treatment has proven itself incompetent to lessen the mortality of this disease, we must at least regard it as a possibility. The following, as I have stated, are selected cases, and, although not the only ones in which the serum was used, they serve to illustrate its unmistakable beneficial action in conditions produced solely, or in large part, by the streptococcus. The serum used in all cases was manufactured by Parke, Davis & Co. and the Pasteur Institute. Before beginning with the case histories, I wish to state that my associate, Dr. J. A. Peters, made careful bacteriological

examinations of discharges, and found the streptococcus pyogenes to be responsible for the infection in all cases.

CASE I.—Mrs. J., age 36; mother of six children, all normal labors with uneventful recoveries; family history negative; aborted at three months. A physician was called, who, in removing the placenta with toothed forceps, lacerated the walls of the vagina, and also produced complete laceration of the perineum. Not satisfied with results, a second physician, who was more skilled than the former, was called, and found the uterus entirely emptied. On the fifth day I was called to attend the case, and found an untrained nurse in charge, with no records. The attendant stated that on the third day after abortion, the patient had a severe chill, followed by profuse sweating and fever. On examination I found a woman with a much distended abdomen, pinched, anxious expression, low muttering delirium, carphology, dry brown tongue, temperature 105° , pulse 130 and weak, extremities cold and clammy, and abdomen very sensitive to palpation. Digital examination revealed a large flabby uterus low down in pelvis and very painful to touch. The lacerations were very extensive; dark grayish discharge from uterus, very offensive, with a grayish-colored membrane covering lacerations. Microscopical examination of the discharges by Dr. Peters revealed streptococci in almost pure culture with a few staphylococci. The patient was sent to hospital and placed in care of two trained nurses. The following is the history of treatment while under my care:

Aug. 17th, 6 p.m., entered hospital; temperature, 104.6° ; pulse, 116; respiration, 38. A rash covered back, sides, abdomen and arms. Ordered strychn. nit., $\frac{1}{30}$ gr., every two hours, alcohol sponge, bichloride $\frac{1}{2000}$ douche, followed by douche of sterile water; milk diet. At 8 p.m. antistreptococcus serum, 30 cc. Aug. 18th, 2 a.m., temperature, 101° ; pulse, 106; respiration, 36; sleeping most of the time. Involuntary action of bowels and bladder; still delirious. At 9 p.m., temperature, 104.2° ; pulse, 120; respiration, 40. Gave 30 cc. antistreptococcus serum. Aug. 19th, 8 a.m., temperature, 99.6° ; pulse, 98; respiration, 26; mind clearer. At 5:30 p.m., temperature, 103.6° ; pulse, 113; respiration, 35; alcohol sponges continued; 20 cc. antistreptococcus serum given. At 10 p.m., temperature, 101° ; pulse, 110; respiration, 26. Aug. 20th, 7 a.m., temperature, 101° ; pulse, 108; respiration, 24; copious discharge of pus from vagina. At 8:30 p.m., temperature, 103° ; pulse, 120; respiration, 26; 10 cc. antistreptococcus serum given. Aug. 21st, 7 a.m., temperature, 102° ; pulse, 110; respira-

tion, 24; temperature receded to 100° during the day, but rose to 103.4° at 8 p.m. Aug. 22d, 7 a.m., temperature, 102.2° ; at 10 p.m., temperature, 103.4° ; pulse, 112; respiration, 28; 10 cc. antistreptococcus serum given. Aug. 23d, 10 a.m., temperature, 100.4° ; pulse, 118; respiration, 26. Aug. 24th, involuntary movements of the bowels ceased; pus discharge still large in amount. Aug. 25th, temperature still receding, and reached normal each succeeding day until the 28th, when it remained at this point. Bichloride $1/5000$ douche used each day; alcoholic stimulation; outside of this treatment no other medication was used but the serum. Patient discharged Aug. 30th completely recovered.

CASE 2.—Mrs. S., age 19; primipara. Instrumental delivery on Feb. 7th; no lacerations. First saw case on Feb. 11th. Gave history of severe chill on night of 10th, followed by sweating and fever. Temperature at this time, 105.4° ; pulse, 136; respiration, 24; lochia, pale pinkish, medium amount, mixed with grayish mucus of bad odor. Microscopically it showed streptococci in large numbers, with a few bacilli, probably of the colon variety. Ordered bichloride douche $1/4000$ every four hours, to be followed by sterile water, and sponging for temperature over 103° ; liquid diet; alcohol baths. Did not use serum until Feb. 12th, 2 p.m., when temperature was 104° ; pulse, 130; respiration, 24. Temperature fell at 4 p.m. to 103° ; body cold and clammy. At 7 p.m., temperature, 103° ; chilly. Applied external heat; 11:30 p.m., still chilling; temperature, 105° ; pulse, 136. Intrauterine douche of lysol, 1 per cent., every four hours; strychn. nit., $1/30$, every two hours; alcoholic stimulants. Feb. 13th, 7 a.m., temperature, 105° ; pulse, 148; respiration, 28; chilling; headache and severe pelvic pains; lochia unchanged. At 8:30 p.m., temperature, 105.4° ; pulse, 140; respiration, 28; 30 cc. antistreptococcus serum given; enema of normal salt solution, with good result. At midnight, temperature, 102.8° ; pulse, 118; respiration, 20. Feb. 14th, 8 a.m., temperature, 100.2° ; respiration, 18; 10 cc. serum given. At 12 m., temperature reached 99.8° ; pulse 96; respiration, 19; discharges still of bad odor; douches continued. Feb. 15th, 8 a.m., temperature, 100° ; pulse, 96; respiration, 20; slept well after midnight; lochia, yellowish in color, medium in amount; enema of normal salt solution, followed by large bowel movement. At 2 p.m., temperature, 101.2° ; pulse, 110; respiration, 20; 20 cc. serum given; 10:30 p.m., temperature, 101° ; pulse, 88; respiration, 18. Feb. 16th, 10 a.m., temperature, 100° ; pulse, 96; respiration, 20; 10 p.m., temperature, 99° ; pulse, 90; respiration,

18; slept well during day. Feb. 17th, at 8 a.m., temperature, 98.8°; pulse, 84; respiration, 18. Temperature did not go higher than 99° during the day. Feb. 18th, temperature, normal. Feb. 19th, patient discharged.

CASE 3.—Mrs. M. Delivered of ten-pound boy January 15th. Was called on January 19th, and patient gave history of chill the previous evening; temperature, 101.5°; pulse, 110. On examination, found slight lacerations covered with grayish membrane and slight foul-smelling discharge from uterus. Ordered douches of creolin, 2 per cent., calomel, 3 gr. On the morning of 20th temperature had risen to 104°; pulse, 136; abdomen distended and tender. She had vomited several times during the night; vomitus consisted of a dark-colored (coffee-ground) fluid; expression, anxious; uterus, large and flabby. Microscope showed streptococcus in pure culture. Administered at once 30 cc. of antistreptococcus serum, and continued douche. On the 21st, at 8 a.m., temperature, 102.5°; pulse, 120; discharge profuse, consisting mostly of pus. Repeated serum in same dose, and gave alcoholic stimulation. Same evening temperature dropped to 101°; pulse, 112. Jan. 22d, 8 a.m., temperature rose to 103°; pulse, 130; serum again repeated, giving 20 cc. at this time. Evening temperature, 103°; pulse, 100. Jan. 23d, 8 a.m., repeated serum with dose of 30 cc.; temperature at this time, 101°; pulse, 110; same evening temperature fell to 99°, and did not rise higher than that but once, which was on the following morning, when it was 100°. Complete recovery followed, and the patient was discharged January 25th.

SCARLET FEVER.

My experience with the serum in the treatment of scarlet fever has been ever more gratifying than in puerperal sepsis. In not a single case that I attended, where the serum was given a fair chance, did death result. In an epidemic of about 50 cases, with a large number of malignant ones, the mortality was *nil* where the serum was used from the beginning. The only cases of death in which the serum was used were seen late in the disease and they were mostly complicated. As will be shown in the following report of cases, the serum was used only in the malignant form and, in most cases, in families where one or more deaths had resulted before this method of treatment was employed. In the milder cases, where the throat symptoms were not so prominent, and in which the temperature was not high, the serum was not used.

When we consider the high rate of mortality in the malignant form of this disease, any measure which produces results so definite and beneficial must be looked upon as a great advancement in medical science. I am fully aware that my experience with this serum is much more satisfactory than that of some of my colleagues. However, in the cases where I have used it, the results have been so striking that I shall continue to administer it when indicated, with the firm belief that benefit will follow. It will be noticed from the following cases that the patients thus treated suffered no unpleasant complications or sequelæ, while some of the milder cases were followed by otitis, nephritis, and rheumatism.

CASE I.—May W., age 5 years; illness commenced on evening of May 8th with chill and vomiting. I was called on the morning of 9th, and found patient with temperature of 104° ; pulse, 150; respiration, 30; pain in back and head; strawberry tongue. During the same evening rash appeared on chest, and spread rapidly over entire body; grayish-white patches on tonsils, which were quite badly swollen. Ordered spray, consisting principally of hydrogen peroxide; calomel in broken doses; sponging. On the morning of 10th no material change excepting increased membrane in throat; child very nervous, temperature ranging during day from 101.6° , after sponging, to 104.5° . At 8 a.m., on the 11th, temperature, 103.4° ; pulse, 130; respiration, 24. Membrane continued to extend, and on account of having had several cases, complicated by diphtheria, suspected it in this case and gave 3,000 units of antidiphtheritic serum. Repeated serum in the evening, giving 2,000 units at this time. April 12th, no perceptible change in membrane, and decided to examine its character microscopically. This revealed an entire absence of the Klebs-Loeffler bacillus, and an almost pure culture of streptococcus. On evening of 12th gave 30 cc. of antistreptococcus serum, temperature and pulse ranging during the night about the same as during the previous night. April 13th, 8 a.m., temperature, 103.2° ; pulse, 126; respiration, 30. At 5 p.m., temperature rose to 105.8° . Serum repeated in same dose at 7 p.m. April 14th, 8 a.m., temperature, 102.3° ; pulse, 120; respiration, 28; membrane gradually disappearing; child feeling better, and taking plenty of nourishment. Temperature at 10 p.m. rose to 104.2° ; pulse, 140; respiration, 24; 20 cc. of serum given at this time. April 15th, 8 a.m., temperature, 102° ; pulse, 130; respiration, 29; membrane greatly reduced. Temperature dropped to 101° at 3 p.m. Serum repeated

at 7 a.m., using 20 cc. at this time. April 16th, 8 a.m., temperature, 101.3° ; pulse, 128; respiration, 26. Highest temperature during day, 103.1° . Membrane almost entirely disappeared, and throat greatly improved. April 17th, 8 a.m., temperature, 100.4° ; pulse, 110; temperature not going higher than 102° during the day. April 18th, highest temperature, 101° ; child much improved; temperature dropped to 99° during the day. April 19th, highest temperature during the day, 100° . April 20th and 21st, symptoms continued about the same. April 23d, patient discharged, but still kept in quarantine. Recovery complete without any after effects.

CASE 2.—Ernest K., age 9, second child in family of five. No absolute records of this case are at hand, as they were destroyed in disinfecting. Previous to this boy's illness, two children, one younger (a girl), and one older (a boy), had died from a malignant form of scarlet fever, and the indications were that this would also be a case of the worst form. On my first visit I found the temperature to be 105° ; pulse, 140; very bright scarlet rash, throat much swollen and covered with thick membrane. Microscope showed it to be, as in former case, streptococcic in origin. Practically the same treatment instituted as in former case, with the exception that more serum was required. No after effects followed, and recovery was complete in ten days.

CASES 3 and 4.—Ruby N., age 8 years; John N., age 5 years; two children in same family. I was called in consultation with Dr. W. to see another child in this family, which died the same evening from a very malignant form of this disease. Owing to her moribund condition when I saw her, the serum was not used. The two cases following this one, and which I attended, were of a severe form. I commenced with the serum immediately upon the first symptom of the disease. The records in these cases were also destroyed. The throat symptoms in both did not approach in severity those of the former cases. The temperature after the first injection of serum began to subside, and an uneventful recovery followed with no complications or sequelæ.

CASES 5 and 6.—Two girls in same family, aged 7 and 9 years respectively. One death previous to my visit. These cases showed unmistakable signs of malignant scarlet fever. The rash was very profuse and red; temperature, 106° in one case; 104° in the other. Throat symptoms were severe, with a thick membrane covering tonsils, posterior wall of pharynx and soft palate. Serum administered as in other cases. In twelve hours the temperature in both

cases was reduced to 103°. I continued the use of serum for two days, and complete recovery followed, with no sequelæ.

Summary.—To obtain good results from the antistreptococcus serum the following points must be observed: The disease must be due to the streptococcus alone, or it must be decidedly predominant, depending solely upon the microscope as evidence. It must be administered early, or as soon as the origin of the disease is known. The quantity administered must be sufficient to produce a perceptible change in twelve hours, and must be repeated as often as indications demand. For this purpose about 30 cc. should be used for the first dose, and repeated in twelve hours at the furthest, and kept up until benefit is derived, the dose being gradually diminished. This interferes in no way with other treatment, such as stimulation, and the treatment of any particular symptom. The serum used should be known to be of standard strength. As stated before, Parke, Davis & Co. and the Pasteur serum were used in all of the above cases. Paltauf's serum is highly recommended by good authorities as being one of the best, and is favored by Peham, who reports excellent results from its use in puerperal sepsis. No bad effects have been noted in my experience from the use of antistreptococcic serum in the treatment of these diseases. In mixed infections it may be used as an adjunct to other methods, but its success is not so striking.

OPERATIVE TREATMENT FOR PAINFUL MENSTRUATION IN YOUNG VIRGINS.¹

BY
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Baltimore, Md.

A GREAT necessity of giving relief to young unmarried women who suffer pain before or during menstruation has long existed. I am surprised to learn that highly educated, intelligent and skillful members of our profession frequently inform young women and their mothers that these conditions are natural, and more or less pain and discomfort are of necessity experienced at these periods. In these later days, when the anatomy and pathology of

¹Read at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists, held at St. Louis, Mo., September 13-16, 1904.

the female generative organs are so thoroughly understood, since our previous ideas of what occurs at this period have been proven to be untrue and we are now certain that we understand what does take place, and why menstruation should be a natural and painless cycle, I believe in very many cases relief can be given these sufferers through minor surgical procedures.

Cullen tells us: "The general teaching is that at the menstrual period there is a distinct loss of substance, the surface epithelium and superficial portions of the mucosa undergoing fatty degeneration and necrosis, and later being thrown off. The mouths of the vessels are thus laid open, allowing free menstrual hemorrhage: regeneration is said to follow rapidly.

This theory at once impresses not only the investigator but also the clinician as a very unusual and crude manner for Nature to bring about the menstrual flow, and quite unlike the orderly and simple way in which the various functions normally take place. For several years Cullen has paid special attention to this point, and thus far has always found the mucosa intact throughout the monthly period, there being no loss of substance whatsoever. The mucosa during menstruation is usually somewhat thickened. The surface epithelium is normal and slightly swollen, the glands are somewhat tortuous, but otherwise normal. The veins are usually dilated, the stroma in the deeper portions is unaltered, but near the surface many red corpuscles are found lying between the stroma cells. They are also present between the epithelial cells of the glands and those of the surface epithelium, and are also abundant in the gland cavities and on the surface of the mucosa. The walls of the veins in the mucosa are very delicate, and it is easily understood how it can happen that, with the increased blood pressure present at the monthly period, there should be a diapedesis of the red corpuscles into the loose stroma, whence the blood can easily find its way to the uterine cavity, which is directed downward, and favors the free escape of the flow. It is a matter of common observation that unless the mucous membrane is very carefully handled the surface epithelium may be rubbed off, and he has also seen at the menstrual period the mucosa is somewhat thickened, and that the superficial portions are filled with blood. Thus the chance of losing the superficial portions, unless very careful technic be employed in hardening and mounting, is greatly increased. Dr. Cullen claims that no destruction of the mucosa takes place at the menstrual period.

Johnstone, of Cincinnati, claims that the endometrium is a

lymph tissue and that the lymphoid character of this tissue begins with menstruation and lasts until the menopause. Previous to this the endometrium is composed of very fine sustentacular threads, which seem to lie perfectly dormant and, like the hair follicles, before puberty has no functional activity. After the menopause this tissue is thoroughly worn out. He holds that the endometrium belongs to that class of organs whose function is to replace organic waste, and that it should be ranked with the spleen and thymus gland instead of with the vagina and bladder. The condition necessary to the production of the placenta is one common to all animals, and is what is known as the adenoid state. This adenoid state is always present in the child-bearing uterus of the human being. He believes that the erect position is responsible for menstruation and that it is brought about by the control of the nervous system and not through ovarian influence. He says that there is a loss of only a single layer of columnar epithelium which lines the cavity of the body and the utricular follicles. Where there is a wholesale shedding it is a pathological condition.

Dr. D. Tod Gilliam says, "menstruation has its proper provisions and preparations for the act, and that all things may work in harmony and without violence. The ripe fruit falls of its own accord, the green fruit holds tenaciously to its stem. The exfoliation of the endometric epithelium at stated intervals is physiologic; it disintegrates and drops off as the hairs of the head. The decidual teeth of the infant and the skin of the serpent are thrown off with ease, because they have served their purpose and are prepared for the change. Under normal conditions and at the proper time the endometric epithelium becomes detachable and, having lost its cohesiveness, is pushed off by the capillary effusion."

Leopold and Gebhard both believe in the diaspedic theory of menstruation. That is, the escape of the accumulated blood is through the interstices between the epithelial cells, which are pushed apart and some of which may be carried away by the blood as it forces its way out. There is also some desquamation of the glandular epithelium. We must allow the truth of the proposition that dysmenorrhea is a symptom, not a disease. There is always a cause for the symptom—namely, mechanical obstruction to the escape of blood from the uterus, due to stenosis of the cervical canal and displacement of the uterus.

A great diversity of opinion prevails as to operating upon vir-

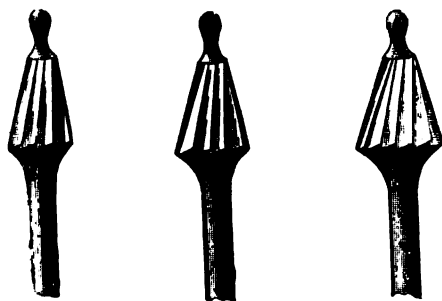
gins for the purpose of overcoming the condition termed stenosis, and the methods suggested are many. Almost every gynecologist has some technic of his own, and it is very difficult to secure his endorsement of the method of his co-workers in the same field. Carstens recommends in cases of undeveloped uteri the introduction of a stem pessary, and does not hesitate to lose sight of his patient for a considerable period of time. Longyear fails to endorse this treatment and, although using his own special metal intrauterine stem, desires to keep his patient under observation, for fear of the development of pain and perhaps an inflammatory condition, due to the presence of this foreign body in the uterus. The method of G. Kolisher, consisting of slitting open the cervix by bilateral incisions, excision of a wedge-shaped piece of the tissue from either side, and final closure of the incision by sutures, is an operation of doubtful expediency.

Under the analgesic influence of cocain, or the more decided and permanent effect of ether or chloroform, we can by rapid dilatation with one of many dilators which have been placed upon the market, stretch the uterine canal and overcome the contraction which exists. In my office practice I frequently introduce upon a small cotton-wrapped applicator a 10 per cent. solution of cocaine, allowing it to remain in position for 15 to 20 minutes; after removing it I introduce a Molesworth dilator, using this instrument on account of its exerting a gradual and evenly distributed dilating force within the uterine canal. Several sittings may have to be made before we have secured the amount of dilatation desired. I frequently introduce an Outerbridge wire stem within the canal, using the smallest size that can be retained, as we do not desire much pressure to be exerted upon the sides of the canal. It is far wiser to commence with a small size and gradually increase.

It is surprising how little pain—upon many occasions none at all—is developed by the use of these wire splints. There are many cases in which the tissues are so dense that this dilator will make no impression upon them. In such cases I make use of a Goodell dilator or one of the other instruments of the same type. There is another class of patients on whom no dilator will make any impression upon the tissues or where, if a powerful stretching instrument is used, there is danger of tearing the structures in place of dilating. It is in these cases that the reamers devised by myself do such effective and safe work.

These instruments which I bring before you for examination I have made use of for ten years at least. Not in a single in-

stance, when handled properly, have I witnessed any injury inflicted by them, and I have record of a large number of instances in which they succeeded in overcoming the condition of stenosis or obstruction when every other means had failed. They are made of three sizes, are cone or olive shaped, with moderately sharp knives cut into their lateral surfaces. There is a blunt end or point in order to prevent perforating the walls of the uterus, especially when placed in the hands of the operator inexperienced in their use. Under the relaxing effect of the anesthetic which should always be administered, the small-sized instrument is slowly introduced until it is felt in contact with the point of contraction. Then the instrument should be given several twists toward the right, at the same time exerting a slight pressure up-



ward. This is very essential in order to engage the dense tissue against the sharp edges of the knives of the reamer. If the tissue is very dense one can hear it cutting against the tough substance, as if you were encountering gristle. Gradual pressure should be persisted in, maintaining the twisting motion, until the entire instrument slips into the cavity of the uterus. The reamer should then be withdrawn, and with a small curet the tissue which has been operated upon should be examined; but if there is a sensation of scraping dense tissue the curet should be withdrawn and the second size of reamer introduced and used in the same manner as No. 1 was manipulated, and again a test made with the curet.

Sometimes it is required to smooth the surface with a sharp curet where shreds of tissue resist the knives of the reamer. The temper and shape or angle of the knives are so adjusted that they will refuse to cut away normal mucous membrane; it is only the hard and the diseased structures that will be attacked by the

instrument. I generally pack the uterine canal with iodoform tape, allowing it to remain three days before removal. After removing the packing I suggest going over the surface with a small and moderately sharp curet. The uterine canal is then packed again and three days later this is removed and the canal swabbed with the official tincture of iodine. The patient is not examined again until after the next menstruation, when a small, dull curet is passed above the internal os. I often introduce an Outerbridge wire-stem pessary, allowing the patient to wear it within two days of expected menstruation. Very often the flow will come on a few days previous to the expected date and the patient will menstruate with the pessary in position. Many patients will say that they have never suffered less pain during menstruation than at this period, when the pessary was retained. I have never seen a strictured condition of the uterine canal develop after this reaming operation was performed, if the after-treatment is properly carried out.

Upon numerous occasions I have seen an anteфлекed or a retro-fleked uterus immediately righted as soon as this gristle tissue was removed. It acted as a drawstring, or as a string to a bow, and as soon as it was severed the uterus was allowed to assume the normal position. The ancient operation of incising the neck of the uterus, producing an artificial lacerated cervix uteri, is obsolete and certainly not justifiable.

Besides stenosis we have another cause for dysmenorrhea—namely, inflammatory conditions of the uterine mucosa or parenchyma. When a young unmarried woman is suffering metritis or endometritis, there exists a most sensitive condition of the organ, and she is likely to experience pain before as well as during menstruation. These conditions must receive their proper treatment and the menstrual pain be considered as a result or secondary symptom to the primary disease. It does not, however, come within the province of this paper to enter into the treatment of these conditions, but I would insist upon curetment being carried out in these cases in order to open the closed orifices of the glands in the endometrium; and the curet, besides, opens the capillaries so that a certain amount of hemorrhage occurs that relieves the condition of congestion which prevails in the uterine tissues. The lymph spaces are, at times, so crowded or filled up that the normal discharge of blood cannot take place, and the patient imagines that she has not menstruated. She experiences the dragging pains around her hips and the sensation of weight which she

has felt for some time immediately before the menstrual flow appeared, but the discharge fails to put in its appearance. In these cases, if we puncture the cervix with Buttle's scarificator and allow a free discharge of blood, the headache and sense of weight in pelvis will be almost instantly relieved.

Stinson's suggestion for the use of thyroid extract for the relief of pain developing during inflammatory conditions existing in the pelvis, is not based upon reasoning or likely to be followed by results. Dysmenorrhea brought about by a lack of development of the genital organs or perhaps a condition of atrophy developing later in life, is very difficult to relieve. It is often a question in these cases where we know pregnancy cannot possibly occur, whether it is not justifiable to remove the organs from the body.

Dysmenorrhea may be brought about by the presence of a growth or growths within the walls of the uterus. A myoma or fibromyoma is frequently responsible for pain before or during menstruation. It is of a spasmodic, expulsive character, very like unto a labor pain. The tumor may press upon the obturator nerve and cause pain and even develop a crippled condition of the hip. The treatment of these cases is the removal of the growth by enucleation, or, if this be impossible, to remove the organ. Dysmenorrhea may be brought about by congestion of the uterus and pelvic organs from disturbances of circulation.

Hirst tells us, that painful menstruation may depend upon a hyperesthetic condition of the endometrium. When the mucosa is infiltrated with blood and the surface epithelium is elevated by extravasation, acute suffering is produced, aggravated by painful contractions of the myometrium and attendant reflex nervous disturbances. It may depend upon an ill-development of the uterine vessels, which are insufficient in their caliber to contain the excess of blood, or upon lack of development in the uterus itself, and a deficient capacity of the uterine cavity. It may be mechanical, especially if a narrow cervical canal is further obstructed by angulation in acute anteflexion, or if the cervical canal is obstructed by a polypus. It may be due to disturbances in the general nervous system without any local disorder co-existing, or it may be due to ovarian disease. Ovarian dysmenorrhea we observe very frequently. We have seen dozens of young women with sensitive and engorged ovaries who dread the onset of each menstrual period, knowing as they do, the suffering which they must endure at that time. In many of these the ovaries bear a number of cysts and on account of the condition of the ovarian tissue the Graffian

vesicles cannot pass through the physiological process which should be carried out within by organs.

To illustrate this condition and to demonstrate the manner in which these cases can be operated upon without unsexing the individual but in giving absolute relief from the suffering experienced, I will relate a case upon which I operated the early part of June, 1904:

Miss H., 24 years of age, a brilliant vocalist with a register of three octaves, had been unable to use her voice with any satisfaction for a long period on account of the pain developed in the ovarian region when attacking the high notes. June 7, 1904, under ether anesthesia I cureted the endometrium, removing a quantity of congested tissue from the cavity of the uterus. I then made an abdominal incision in the median line and found both ovaries hyperemic and distended. Upon the left side I opened three good-sized cysts, and upon the right side two medium-sized cysts. The Graffian follicles in each ovary were distended. I enucleated these with a sharp spoon curet and scraped the walls of the cysts in order to destroy the germinal membrane. I then closed these openings with catgut sutures and used the same material to close the opening in the abdominal wall.

The patient made an uninterrupted and rapid convalescence, and has not had the slightest amount of pain in the ovarian region, and no pain during two menstruations which she has passed through since the operation. Very many gynecological surgeons, perhaps, would have removed both ovaries under these conditions, and the result would have been the unsexing of the patient and probably the loss of her voice, especially in the upper register. I have heard her sing, and I am certain that the voice has not been impaired in the slightest degree. Two physicians present during the operation, when they saw the condition of the organs in the pelvis, expressed the opinion that no relief would follow the method unless I performed the radical operation and removed the appendages completely.

Resection of the ovary is followed by such successful results that we are not justified in removing the organs unless the complications present give no opportunity to perform the conservative operation. In cases of distension of the Fallopian tube by blood or pus, we should evacuate the fluid, stretch the lumen of the tube to overcome the tendency to leave a stricture, and in those cases where it is impossible to carry out this treatment we may transplant the ovary into the portion of the tube where it enters the

uterus. We have sufficient evidence to-day that pregnancy does occur under these conditions and the sexual life of the patient is saved by this procedure.

There is another class of cases in which there has prevailed at some time of the individual's life severe attacks of pelvic peritonitis or cellulitis, leaving as a sequel fixation of the organs within the pelvic basin and developing severe pain and discomfort before and during menstruation. These adhesions can be freed either by incision made through the upper portion of the vagina or preferably by an abdominal section. A displaced uterus, especially one drawn to one side, can be more easily and more certainly remedied by section through the abdominal parietes than through the vaginal route.

There is another class of cases which give us great anxiety, and which we fail to relieve by conservative treatment. I refer to those who have displaced ovaries. The use of electricity as suggested by Massey, what he terms his vagino-abdominal treatment, appears to be of no service, in my experience, and very many of these are compelled subsequently to submit to removal of the dislocated organs in order to obtain relief from their sufferings. I have found that an abdominal supporter, properly made and applied, will overcome much of the pain endured at the time of menstruation.

Lastly, I will speak of that class of cases where the dysmenorrhea is due to a general systemic neuralgic condition. In these cases, at times, relief is secured by the use of the various forms of electricity. In some individuals the static, in other the galvanic, form will ease the suffering. It is doubtful in many of the cases whether removal of the appendages would accomplish anything more than bring about premature change of life, while the patient remains just as nervous as before she was operated upon. I constantly see these cases where they have naturally passed through the menopause, and their condition has not improved in the slightest degree. Many of these women spend much of their time in bed or reclining upon their bedroom couch.

Finally, this paper has been written rather to develop discussion than to bring before the profession any new operative methods or technic. I shall feel amply repaid for my labor if I save even one young virgin from being unsexed by a radical operation, where a conservative one would have availed in giving her relief.

DR. H. W. LONGYEAR, of Detroit, said there were few who would take issue with the essayist relative to the treatment of dysmenorrhea due to severe organic disease, associated with disease of the ovaries, adhesions, etc. All would agree with him as to the measures to be adopted in such cases.

Conservative treatment was right in young women, and when one could operate so as to save an ovary or part of an ovary he should do so. In many cases this could be done safely. Sometimes one might err in so doing and might have to operate again, but in the majority of cases one could conserve the tissues there with perfect safety, and with the result of maintaining the woman's natural menstrual function.

It seemed to the speaker, however, that the trend of the paper as regards operative intervention in cases of dysmenorrhea in young virgins was too radical. Many young girls suffered from pain for an hour or two in menstruating, but as soon as the flow was established the pain ceased. Would the essayist operate on such cases? A little medicine might stop the pain, and perhaps not. This pain, even if it continued, produced no pathological results, and these cases went on for years that way; the women married, bore children, and their troubles ceased.

He entered a protest against operating upon cases of dysmenorrhea that were of short duration in young persons. He did not think we should subject any unmarried woman to an operation for painful menstruation if it could be safely avoided. The minor cases of painful menstruation of short duration did not need operation.

DR. HERMAN E. HAYD, of Buffalo, N. Y., alluded to the importance of examination in these cases, and said even after an examination was made one might find the most distressing cases were the ones that had no evident pathology. Retrodeviation of the uterus was responsible for much of the dysmenorrhea in unmarried women. If one upon examination should find a retroverted uterus, a prolapsed ovary, a tender, sensitive tube, then there was a rational basis on which to work; but because a woman had a small os it did not follow that she was going to be the subject of dysmenorrhea. In all probability many of these cases were due to an impoverished condition of the whole system. They were functional troubles, and had to be met accordingly. If, however, there was an obstructive dysmenorrhea associated with a congenital atrophic condition of the uterus, probably one could institute some operative measures, and the interference which had been most successful had been dilatation and curettage, and the wearing of a stem pessary.

He could not imagine what could be accomplished by the "screw-driver" which the essayist had exhibited that could not be accomplished by simple dilatation. Unfortunately, some of these cases were dilated, and after two or three months the canal re-contracted and the suffering of the patient was about as great as it was before. On the other hand, if a stem pessary was intro-

duced, and worn by the patient for a few weeks or months, it was possible to keep up continuous dilatation so that good would result.

DR. WILLIAM H. HUMISTON, of Cleveland, Ohio, said that dysmenorrhea was a common disturbance, and yet he had been unable to find a case that was not accompanied by an inflammatory condition of the mucosa. He had seen cases of narrow, conical os, the patients menstruating without the least sign of distress; but the moment there was an inflammatory condition of the mucosa added to that, that moment the patients began to have painful menstruation. In cases of this kind he thoroughly dilated the uterine cavity, curetted, and had the patients wear an Etheridge pessary, closely watching them for several months, and if there was no accompanying disease of the appendages, cure was decided and complete. But in these cases occasionally one would have a failure, because he did not recognize an ovary which was smaller than normal, the cirrhotic ovary, which was hard to detect unless an examination was made under an anesthetic, and there was no relief afforded except the removal of these shrivelled, corrugated, smaller than normal ovaries.

He wished the essayist would go a little more into the subject of curing retroflexion of the uterus by the method he mentioned, and tell how the reaming-out process of his would restore or replace and keep in place a retroflexed uterus.

DR. D. TOD GILLIAM, of Columbus, Ohio, spoke of the undeveloped condition of the uterus as a cause of dysmenorrhea.

DR. JOHN YOUNG BROWN, of St. Louis, Mo., said that his experience in dealing with cases of painful menstruation was that unless there was a palpable pathological condition present, it was better to leave them alone. He was opposed to indiscriminate treatment. He had found that the majority of cases that came to operation were of gonorrheal infection, puerperal infection, and infection following minor office gynecological procedures.

He protested against the office treatment of these cases. The mere fact of a young woman having painful menstruation did not justify surgical intervention. He believed that a large number of these women, if they took boxing lessons and were put on horseback, would get well.

DR. WILLIAM J. ASDALE, of Pittsburg, criticised the instrument exhibited by the essayist.

DR. L. H. DUNNING, of Indianapolis, Ind., said that we ought not to approach any case of dysmenorrhea without studying the surroundings very carefully. We should have a complete and thorough history of the case, in order to be able to determine the character of the lesion.

He had been surprised, in studying the collected histories of some two thousand cases, to find that in about 15 per cent. of them there was dysmenorrhea at the beginning of menstruation. This, he thought, would go to disprove one statement made by the essayist that nearly all of the cases were due to inflammation, and the statement of another speaker to the effect that most all of the

cases were due to gonorrheal inflammation or some kindred infection. In the majority of cases in which dysmenorrhea began with menstruation, he thought one would find some errors in the development of the organ, or errors in the development of the nervous system, which would lead to painful menstruation. Every case should be studied carefully upon its merits. Some would be found to be due to nervous conditions, others to hyperemia of the ovaries, and still others to venous congestion of the pelvic organs, including the uterus and the ovaries. Obviously, all these were not cases demanding operative procedure.

He spoke of a method of relieving dysmenorrhea due to ante-flexion, which he had found very efficient and could recommend. It was the operation of Dudley for ante-flexion of the uterus associated with painful menstruation or sterility. He had done this operation forty or fifty times, with almost uniformly good results. It was simple in its technique, and exceedingly efficient when one followed the directions given by Dudley. One should not do it on the under-sized uterus, but on a uterus which was well developed. The advantage of this operation was that in the vast majority of cases it afforded immediate relief. It was frequently followed in married women by impregnation, and it did away with the constant treatment by dilators and by curettment, as well as by the various other means, the constant use of pessaries, etc.

Regarding conservative operations for cysts of the ovary, he thought it was a mistake to curet the cavity of the cyst. Small cysts might be punctured and let alone. The larger ones could be treated very much better, and with less danger of doing injury to the remaining healthy structure, by stripping out the lining membrane of the cysts rather than curetting them.

DR. SELLMAN, in closing the discussion, stated that the criticism of his instrument was largely due to indifference in examining it. In this instrument the knives were not straight down, but when they were introduced the instrument would cut out gristly tissue just like sharpening a lead pencil, and when it reached normal mucous membrane, one could turn it around and it would not make any impression at all.

DR. RUFUS B. HALL asked whether the essayist ever had heard of a stricture following the use of the instrument.

DR. SELLMAN replied that in not a single instance had he had stricture or cicatrization occur, as the instrument would only cut dense gristly tissue.

As to the remarks of Dr. Longyear, who said that he would only operate in cases of organic disease of the ovary or of pelvic disease, there was a good deal of truth in that, and if these patients only suffered a few hours, he would let them suffer. But the object of his paper was to recommend a plan for relieving suffering women, or preventing them from suffering which came on about thirteen times a year.

In regard to retroversion or retrodeviation of the uterus, he thought this condition was responsible undoubtedly for many

cases of dysmenorrhea, and in these cases he had been asked how it was possible that such a displacement could be corrected by the removal of this tissue. In a case of antelexion, with the condition of thickening of the tissue as indicated, this tissue would draw the uterus over and prevent it from assuming its normal position. The same was true in regard to retrodisplacement. In order to afford relief, one should cut away the string on the bow, as it were, and then the uterus could be elevated. It did not jump up of its own accord. By manual manipulation or by means of a probe one could straighten the uterus and it would remain so. A certain amount of distension of the bladder would keep it antelexed, but by introducing a tampon in the posterior vaginal cul de sac one could keep it up there, behind. The removal of this string on the bow allowed one to replace the uterus.

In regard to curetting the cavity of cysts, it was safer to dissect out the cyst wall than to curet it. He would accept Dr. Dunning's criticism in that regard, but in this particular case the tissue was considerably thickened, and he used a sharp curet in connection with dissection. He dissected out a certain amount of tissue, then sewed up the ovary with catgut. He did not remove this organ, but simply opened the cyst and removed the germinal membrane. This could be done by a sharp curet, or with a knife. It was safer with a knife, but not quite so rapid.

PSEUDOMEMBRANOUS MONOCYSTIC TUBERCULAR PERITONITIS.¹

BY

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THE object of this monograph is to put on record a variety, or condition, of the tubercular peritonitis that seems to me to offer pathologic conditions not heretofore described, and which, because of such differences, apparently demands some method of surgical treatment quite different from that usually recommended in the other varieties of tubercular peritonitis. The condition will be designated as "pseudomembranous monocystic tubercular peritonitis," as this term describes the cases seen by me. The pseudomembrane was composed of fibrin, was white in color, about one-twentieth of an inch thick, unorganized, and covered the parietal and visceral peritoneal surfaces in such a manner as to form a sac of greater or less size, according to the length of time of

¹Read at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists at St. Louis, Mo., Sept. 13-16, 1904.

progress of the disease, the same beginning at the bottom of the pelvis and extending upward, pushing the floating viscera higher and higher toward the diaphragm as the fluid in the sac increased in quantity. The intestines seemed to be held together by the pseudomembrane, but apparently were not in any other way adherent, so that when the sac was emptied they sank back into the depth of the abdomen and pelvis, the pseudomembrane being pushed before them. In stripping this fibrous exudate from the peritoneum, the underlying serous membrane was seen to be studded with miliary tubercles, and to all appearances resembled the tubercular peritoneum of the usual cases of the ascitic variety.

For the purpose of a comprehensive understanding of the pathology of the cases which I have to report, it will be necessary to take a brief glance at the literature of tubercular peritonitis in general. In looking over this subject, one is struck by the more or less confused status of the gross pathology, some observers treating the different conditions found in the abdomen as distinct varieties of the disease, while others divide it into progressive stages, recognizing but the one disease with its various manifestations.

Three distinct varieties are noted by Wunderlich¹, namely, (1) exudative; (2) fibro-adhesive; and (3) purulent. Another² designates the three varieties as: (1) tubercular ascites; (2) fibroplastic and tubercular peritonitis; and (3) adhesive tubercular peritonitis; while an entirely different view is taken by Abbe³, who divides the disease into six stages, arranged according to the supposed progress of the disease. The second author quoted describes the conditions of the three varieties as follows:

(1) Tubercular ascites—miliary nodules covering peritoneal surfaces, adhesions few and slight, general abdominal dropsy, although the latter may be more or less circumscribed by adhesions of coils of intestine.

(2) The fibroplastic tubercular peritonitis—no serum found, peritoneal surface covered with a thick layer of gelatinous fibrin, cementing together adjacent organs and filling all interstices with fibrin.

(3) Adhesive tubercular peritonitis—primary exudate slight, endothelial cells proliferate and form new tissue, which undergoes cicatrization, causing extensive and firm adhesions, resulting often in obstruction of the bowels.

Mauclaire⁴ finds three varieties,—the ascitic, the dry fibrous, and the ulcerative, which he subdivides as follows: the ascitic

may be acute, subacute or chronic, the latter being either generalized or encysted. The dry fibrous may be merely dry or adhesive also. The ulcerative form may be either dry or suppurative, and in the latter case either generalized or encysted in one or several loculi.

Murphy¹² mentions four varieties,—namely, (1) disseminated, exudative, miliary, non-confluent, serous (ascitic) variety; (2) nodular, ulcerative, or perforative: the least frequent variety; (3) adhesive, fibroplastic, cystic, partition or obliteration variety; and (4) suppurative, circumscribed, or general mixed infection.

It will be noted that in none of these descriptions is it stated that the so-called fibroplastic, fibroadhesive, or dry fibrous is accompanied by a serous exudate; in fact, the designation of dry fibrous given by Maucclair would indicate its absence in cases noted by him. In truth, a fibrinous exudate, covering all peritoneal surfaces, is mentioned by but one author of a number examined by me ("American Text-Book of Surgery") and it is there distinctly stated that no serum is found. Murphy, in his adhesive, or fibroplastic variety, describes a different condition entirely. Furthermore, the encysted cases are classed by all of the authors quoted as belonging to the first variety,—that is, the exudative or ascitic. I call attention to these statements, as I shall show by the report of the cases which I will cite that these classifications do not cover them.

My own belief is—based perhaps on a comparatively limited number of cases of the various varieties of tubercular peritonitis,—that the so-called different varieties are simply different stages, one following the other with greater or less rapidity, the latter depending upon the powers of resistance of the individual, due perhaps to some peculiar condition of the blood, or other modifying factors in the human economy not known to us. In some, the disease may not pass beyond the first stage—that of exudation—while in others it passes quickly to the second, which I shall term pseudomembranous, and then, when this unorganized fibrinous exudate breaks down, we have the ulcerative or purulent stage.

It is conceded by all writers on this subject that the cases of the exudate variety—that is, the first stage—are the most amenable to operative treatment, and are also, fortunately, the most numerous; one observer (Wunderlich⁶) finding that sixty-eight per cent. were of this variety. Simple tapping will cure many of these. In some instances the fluid has been drained out by a can-

ula and sterile air⁶ injected into the peritoneal cavity, while in others sterile water⁷ has been similarly used, and in both methods cures are recorded. Why these simple measures result in cures can only be a matter of speculation, as we do not know the *modus operandi*. Various theories, resulting from experiment and clinical observation, have been advanced, but none yet are proven. Robert T. Morris,⁸ of New York, believes recovery is due to the production of toxalbumins by putrefactive bacteria, after operation. Arcangeli⁹ thinks the serous exudate which follows the operation has an immunizing property, and so stops the further development of the bacilli.

Careful microscopic examinations of the affected peritoneum after each of four consecutive operations on a girl twenty years old were made by D'Urso,¹⁰ who affirms that cure takes place by leucocytic invasion, organization of fresh connective tissue, vascular neoformation, and substitution of tuberculous tissue by inflammatory neoformations. The processes referred to in these theories certainly can have their fullest and most effective action when the remedy can be applied to the bare, tubercle-studded peritoneum, and as surely have their least effect when applied to a thick, fibrinous exudate covering and protecting such a peritoneum, as presents in the conditions cited by the writer. Hence, the simple therapeutic measures which are sufficient to cure the cases of the ordinary ascitic variety are inadequate when applied to those of the pseudomembranous variety. Therefore, the prognosis is bad with the usual methods of treatment, and other more effective measures must be sought.

The following cases illustrate these observations on pathology and treatment.

CASE I.—Florence S., 14 years old, menstruated regularly for one year; health good, except for a feeling of lassitude; no emaciation, color good. Patient had not complained of anything, but her mother, being at that time in the hospital under my care, asked me to examine the child, as she did not look as well as usual. This led to the discovery of a small cystic tumor in the abdomen, midway between the navel and the pubis. Her temperature before the operation, which was at Harper Hospital on April 8, 1896, was 99.5°.

Operation: incision, removal of about two pints of thin, straw-colored fluid; lavage, first with normal salt solution, then with 1-10,000 bichloride solution and this followed by the further use of the salt solution; insertion of glass drainage tube and closure

of wound with silkworm gut sutures. Pathologic examination of debris removed from the surface of the membrane in the pelvis showed tubercle bacilli present. Intestines or omentum were not seen during the operation. The sac was composed of a thick, fibrinous exudate, forming a pseudomembrane of about the thickness and color of buckskin, which closely adhered to the parietal peritoneum in front, then was reflected over the intestines and omentum, pushing them upward. The same exudate covered the uterus and appendages, which could be palpated by the finger and were not appreciably enlarged, so the removal of any of these parts was not considered necessary. Nothing coming from the drainage tube, it was removed on the fifth day and the wound allowed to close. The temperature remained about the same as previous to the operation until the fifteenth day, when it showed daily exacerbations, gradually increasing until it registered 103° on the twenty-sixth day, when the wound was opened, under anesthesia, and an abscess deep down in the pelvis discovered and drained through the original abdominal opening.

Recovery was slow. Drainage of pus and shreds of membrane was profuse for weeks. The patient left the hospital about three months after the primary operation with a small rubber tube still in the wound, as some pus continued to come from the deep parts of the fistulous tract. This tube was kept in for three months longer, with the daily use of a solution of tincture of iodine, one drachm to the pint. The purulent discharge then ceasing, it was removed.

I examined the patient two years ago, five years after the operation, when she appeared perfectly well. The old scar was retracted and a small fistula was found, which allowed the passage of a probe well down into the pelvis. She was menstruating regularly, and said the wound seemed to be kept open by the collection of a small quantity of blood which appeared occasionally during the menstrual epoch and had to be evacuated by pricking the small, blister-like protuberance at the middle of the scar. The fistula doubtless communicated with a Fallopian tube that was the seat of the primary infection, and probably should have been removed at the operation.

Thinking that probably the long-continued suppuration in this case was started by infection through the use of the drainage tube, I determined that my next case of that variety of tubercular peritonitis should not be drained. Although operating on a number of cases of the simple ascitic variety, another of this peculiar

kind did not present itself until the year 1901, when I operated on two, both in a far advanced stage of the disease, and both succumbing eventually to exhaustion incident to suppuration, ulceration and perforation of the intestines, although treated differently—the first by non-drainage and the second by free drainage. Their histories are briefly as follows:

CASE II.—Lena S., 17 years old, single, teacher, was brought to me by Dr. R. G. Dean, of New Hudson, Mich. She had been complaining of lack of appetite and weakness for several weeks before calling a physician, but had no pain and no discomfort until the abdomen commenced to enlarge, about two months before coming to the hospital. Patient was emaciated, abdomen distended by a fluctuating tumor reaching from the pubis to two inches above the navel; temperature 102.2° , pulse 112. Operation at Harper Hospital, April 26, 1901. Incision, drainage, lavage with normal salt solution, closure of wound with silkworm gut sutures. Appendages not removed, as they appeared of normal size, as felt through the exudate. The same buckskin-like pseudomembrane was present as in the previous case, but the sac was much larger, containing about eight pints of clear, straw-colored fluid. No tubal or other abscess present.

The pulse and temperature fell slightly after the operation, but remained much the same as before until her discharge, May 16, 1901, when the pulse was 118, temperature 100° . The wound healed well. The patient was removed to her home by her mother against my advice, as she was no better, and I desired to reopen the abdomen and drain. Her physician reported that about a month after her return she developed symptoms of stoppage of the bowel, which was relieved by the breaking of a large abscess through the scar, from which the fecal matter and pus escaped until she succumbed.

CASE III.—Margaret N., 20 years of age, unmarried. Referred to me by Dr. R. L. Parkin, of Romeo, Mich. Her first symptoms were apparently trivial, were not noticed by the patient, and it was not until decided loss of flesh, fever, and abdominal distension began to become manifest that anything serious was apprehended. She had been confined to her bed five weeks when first seen by me, and had been treated for typhoid fever. At the time of the operation she was much emaciated, very anemic, and the abdomen was apparently distended to its fullest capacity by a fluctuating tumor, which was dull on percussion over the whole abdomen, except a small space in each hypochondrium and over the

stomach. Temperature 102° , pulse 116. Operation at the Woman's Hospital, December 3, 1901. A large quantity of straw-colored fluid was evacuated, and with it a number of masses of jelly-like consistency. The pseudomembrane in this case was thick, quite firm in texture, and when pulled from the peritoneum, showed the rough surface characteristic of miliary tuberculosis. It formed a complete sac, which appeared to fill the entire abdominal cavity, extending posteriorly high up on either side to the liver and spleen and pushing the intestines upward to the farthest limits of the abdominal cavity. The intestines were not seen, being entirely covered by the membrane, but when the sac was empty the form of their convolutions could be seen as its wall was pushed down before them. The left Fallopian tube, being considerably enlarged, was removed. Microscopic section of this specimen by Dr. Hickey, of the Detroit Clinical Laboratory, indicated this as the point of primary infection. It contained no pus.

The cavity was flushed with a large quantity of salt solution and a glass drainage tube inserted. The temperature remained below 100° for ten days, then began to rise slightly. At this time the fluid drawn from the drainage tube began to be purulent and contained particles of the membrane, indicating that it was breaking down. The patient left the hospital January 3, 1902, one month after the operation; temperature 100.6° and pulse 116; drainage tube still in and discharging much pus and shreds of membrane. I saw her again four weeks later at her home. Large masses of the pseudomembrane had been coming away; the discharge was very copious and had a fecal odor; temperature was 103° and pulse 120. The abdominal wound was entirely open, but drainage being apparently defective, I gave an anesthetic, opened the posterior culdesac and placed a large drainage tube through it into the vagina. Some pockets of pus were also opened in the pelvic cavity, and it was noted that the membrane had almost entirely disappeared, its place being taken by an apparently ulcerating surface. The febrile symptoms abated considerably after this, but the end was only slightly retarded, as she died of exhaustion three weeks later.

These cases, as far as so limited a number can do so, teach the necessity of early diagnosis and early operative treatment. The first one was saved simply because the disease was discovered in a less advanced stage than in the other two, thus allowing the use of the balance of vital force so necessary to stand the long drain incident to recovery from this form of the disease. Then, again, the

disease was probably arrested before cheesy degeneration had occurred to destroy the integrity of the intestinal walls. The pseudomembrane seems to be placed by nature for the purpose of protecting the rapidly disintegrating peritoneal membrane and the underlying tissues. The fact that this thick pseudomembrane covers up, and thus protects, the tuberculous membrane from the action of air and light, or whatever agent it may be that results in the cure of ordinary cases of tubercular peritonitis, is probably the explanation of the failure of operative procedure in producing the immediate beneficial effects that obtain in the non-membranous stage of the disease. This thick, fibrinous exudate, causing by its presence totally different conditions from those existing in cases where it is absent, would suggest also different methods of treatment at this stage of the disease. Believing as I do that the presence of the membrane is the obstacle which prevents the cure, any therapeutic measures should be first applied to accomplish its removal. As this probably cannot be managed without drainage, drainage should be the first requisite, and such other measures added as will facilitate the rapid disintegration, disinfection and removal of the pseudomembrane, as well as the copious seropurulent discharge which supervenes. A somewhat similar fibrinous exudate is found in some cases of pyothorax, and this is usually scraped away when operated upon, and the pleural cavity drained and washed for a long time, resulting usually in complete cure. While the conditions are different and a curettage of the peritoneal cavity a practical impossibility, still it would seem that the same general plan of treatment should be observed. The great mass of fibrinous exudate covering the diseased peritoneum will eventually break down, can never become absorbed, and so should be removed.

RECAPITULATION.

Definition.—Pseudomembranous monocystic tubercular peritonitis is that form of tubercular peritonitis which is characterized by the formation of a thick, white, fibrinous pseudomembrane on all of the tubercular peritoneum, it being found covering the parietal peritoneum and cementing together and covering the intestinal coils in such a manner as to form a sac, of greater or less capacity, according to the progress of the disease, which contains straw-colored fluid with occasionally jelly-like masses and shreds floating therein.

Treatment.—Abdominal section, evacuation of fluid, and thorough washing out of all shreds and gelatinous masses with normal salt solution; thorough drainage by glass or rubber tube, both abdominal and vaginal, when indicated. This is to be followed by after treatment, consisting of frequent lavage with a weak aqueous solution of iodine (Tr. iod. 3i, water oi) until the pseudomembrane is disintegrated and the purulent discharge that follows has ceased. Internally, the rational treatment of tuberculosis, consisting of the use of creosote, cod-liver oil, and the like, together with a supporting diet and suitable hygienic surroundings.

Prognosis.—The prognosis is unfavorable, from the very nature of the disease, although a few may recover if not too far advanced, after months of constant drainage and careful nursing.

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- 271 WOODWARD AVENUE.

DR. RUFUS B. HALL, of Cincinnati, Ohio, differed from some of the quoted writers in regard to the different varieties of tuberculous peritonitis. He was of the opinion that it was the same disease in different stages of development. Ultimate success depended largely upon the variety of the disease, the general condition of the patient, the previous history, the great prostration, etc. Very many of them were in such a condition that they could not withstand much trauma of any kind. His experience in dealing with that variety in which there was no accumulation of fluid had not been very satisfactory from a surgical standpoint. The greatest relief was to be afforded in those cases in which there was an accumulation of cysts by letting out the fluid and draining. Every one of them should be drained, in his experience. He had, time and again, made sections when the patients were in a desper-

ate condition, had put in a drain, and in six months or a year later the patients returned, when he removed one or two infected tubes, and cured them; whereas, he thought that if he had done a prolonged operation at the outset, with the patients in a feeble condition and unable to withstand trauma, they never would have rallied. He knew he would be criticized by the men who were to follow him in the discussion when he said that all of these cases of fluid in the abdomen should be drained, whether it be serum or pus. He was convinced from an extensive surgical experience that he obtained better results when he drained all of them. In all cases, whether there was pus or serum, this pseudo-membrane existed; and in all pus cases there was a walled-off sac which had to be dealt with, and without drainage these patients did not do well. To say that they all recovered after drainage was saying too much, but a large majority of them recovered primarily.

DR. L. H. DUNNING said there were two or three questions which, it seemed to him, we ought to try to settle in the treatment of cases of encysted tuberculosis of the peritoneum, such as reported by Dr. Longyear. First, as to whether we ought to remove the Fallopian tubes in all instances. His belief was we should. He thought in all cases of encysted dropsy, where fluid accumulated in the pelvis, the primary infection was in the tube; that here was the focus of the disease, and the tube ought to be removed, or the fistula following, if one resulted, would persist indefinitely. He had found that it did not require much effort to remove such a tube. Frequently one was able in these cases to ligate as he was in other cases. If one undertook to ligate the pedicle of tissue formed by pulling up the tube, he would find in many instances the tissues were so friable that thread would cut through them and the ligature would do no good. Fortunately, all one needed to do in such cases, as a rule, was to use pressure forceps upon the stump for a few minutes and cut it away and, when he was ready to close the abdomen, remove the pressure forceps and there would be no hemorrhage. This means shortened the operation very much.

The other point was with reference to drainage. He was in most hearty accord with both the essayist and the discussor in the statement that we ought to drain every case of this kind through the abdominal wall.

Should we in these cases attempt to break up adhesions? A distinguished Fellow of the Association (Dr. Price) had insisted upon breaking up adhesions in all cases of tuberculosis of the intestines. The speaker's belief was that the pseudo-membrane (which was adventitious membrane) thrown out was protective, was conservative on the part of nature, and that the surgeon ought not to attempt to separate adhesions.

The last point was as to whether one might not be justified in attempting to shorten convalescence in these cases by curetment of the fistulous tract, if one persisted. In three of his own cases he had cautiously curetted the sinuses and packed them

with gauze to the bottom, and had splendid recoveries. In one instance there was wide invasion of the abdominal wall, as well as in the pelvis, and with a great deal of timidity he used the curet; but he did it carefully and packed, and there was healing of the fistula within a short time.

DR. HERMAN E. HAYD said that every case should be treated as a law unto itself. Some need to be drained, others not. Usually those cases with simple effusion, or of circumscribed dropsy, got well if one opened the abdomen and immediately closed it. One did not need to disengage bowel, or disturb the adventitious membrane. Simply the entrance of air, or such little traumatism as resulted by manipulation, cured.

It was not well to disturb the protective membrane which Dr. Longyear depicted, and Dr. Hall had shown by the report of a case how easily the bowel would tear under these conditions. If one only knew where the site of infection was, there would not be so much difficulty in dealing with these cases. We were made to believe the mode of infection was only through the vagina and up the os through the uterus to the peritoneal cavity, but this was not so. Many of them were general and systemic. The infection was through the blood, as was seen in other inflammatory conditions, the result of bacteria other than the tubercle bacillus.

DR. J. HENRY CARSTENS, of Detroit, thought that all that was necessary in ordinary simple encysted cases of this condition was to wash them out and let them alone. One should not try to break up adhesions, as serious complications might follow. In tuberculous peritonitis the patients should be let alone as much as possible and nature given a chance. He said if he operated upon a case of tuberculous appendicitis and drained it he would get trouble, because along the tract of his drainage tube there would be tuberculous deposits, and he would have a fistula there for a long time. On the other hand, if he took out the appendix, closed up the opening with silkworm gut sutures *en masse*, tightly, he would have union without the formation of a fistula.

DR. D. TOD GILLIAM, Columbus, shared in the view advanced by Dr. Carstens that we should not interfere too much in cases of tuberculous peritonitis. He believed such cases as had been described would be better without operation, if one could diagnose them properly beforehand, on the same principle that the general surgeon, when he found a psoas abscess, did not interfere with it. If he opened it up, there was going to be trouble. When encysted tuberculosis was encountered, one should merely let out the contents. He did not care whether one washed out these cases one way or another, he was likely to have a bad result.

There were other forms of encysted tuberculosis in which the results were not bad, and here it was necessary to open the cyst. He did not believe in breaking up adhesions and in separating

viscera in these cases. If one separated viscera that were friable, with the slightest touch he might tear into the intestine.

As to the general treatment of tuberculous peritonitis, he was not a believer in the theory advanced that in most of these cases the infection was from the vagina and uterus, because there were quite a number of instances in young women who had never been exposed to infection. The infection in some of these cases was through the blood.

A young woman came to him about a year ago with every organ in the abdominal cavity literally studded with tubercles. He opened her abdomen, let out the fluid, etc., but did not wash out the cavity, put her back to bed, as she was in a desperate condition, and three months afterward she walked into his office absolutely well. He treated this case expecting that her abdomen would again refill with fluid and tubercles.

DR. LONGYEAR, in closing the discussion, said he had introduced these cases as illustrating a rather unusual form of tuberculous peritonitis, in order to get the views of the Fellows regarding the treatment of them rather than the treatment of tuberculous peritonitis in general, which really had been made the basis of most of the discussion. Take a case of simple tuberculous peritonitis with a large cyst, the whole abdomen being full of dropsical fluid, he did not believe such a case needed to be drained. He agreed with Dr. Hayd in washing them out and sewing them up, believing that by so doing they would get well. It was true, however, in many of these cases there would be a reformation of the fluid. He had seen this occur.

In regard to fecal fistula in cases of tuberculous peritonitis, he did not think the fistula would heal if one sewed up the wound, or if he put in a Murphy button. If in such cases the wound was sewed up or a Murphy button put in, there was no adhesive quality to the serous membrane and it would ulcerate.

Regarding the use of pressure forceps in amputating the tube, he was interested in the description given by Dr. Dunning, but had never tried it. He recalled one case in which he enucleated the tube and ovary when there was no bleeding whatever, although everything was friable. The patient recovered perfectly without ligation of vessels. In other cases he had found it necessary to ligate bloodvessels separately. If the tube and ovary could be enucleated, so as to separate the tissues very close to the tube and ovary, it could be done without a ligature. But this could not always be done. He would hardly dare put on pressure forceps and take it off after a few minutes unless it was something after the fashion of the angiotribe.

He did not believe in breaking up adhesions to the bowels in cases of tuberculous peritonitis. It was extremely hazardous, and one would get into a lot of trouble if he tried it.

CHRONIC ADHESIVE PERITONEAL SCLEROSIS.¹

BY

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AMONG the rarer abnormal conditions found within the abdomen is one peculiar and interesting; possibly, too, more frequent in occurrence than has heretofore been suspected. Chronic adhesive peritoneal sclerosis is progressive, yet is characterized by an absence of active symptoms, including ascites. In the early stages the peritoneum is rigid and contracted; later the connective tissue becomes excessively hypertrophied, with adhesions between the involved peritoneum and all viscera with which it comes in contact. As soon as these adhesions interfere with the functions of any organ, symptoms referable to such interference supervene. When the involvement prevents some important organ from performing its necessary functions death ensues. In the following illustrative case only a circumscribed portion of the peritoneum—the pelvic—was affected.

History.—Mrs. M., aged 36 years, was a large, well-formed woman of good health until her recent confinement. She first menstruated at seventeen years, her periods being regular in time and quantity, and accomplished without difficulty. She did not use alcoholic drinks, nor was even a trace of syphilis or gonorrhea to be found in herself or husband. When 26 years of age she became a mother. Her first-born died at seventeen months, of diphtheria. Within the next seven years she gave birth to two other children, who were alive and well at last reports. In all three confinements labor was easy and convalescence normal. Her fourth delivery, though not instrumental, was somewhat more severe than the others, and the child lived but twelve days. On the second day after this last confinement she complained of severe pain in the lower part of the abdomen; on the eighth day a rectal tenesmus supervened, there being frequent passages of mucus streaked with blood. She thought there was no fever at this time and not much bloating. The rectal disturbance continued about two months; gradually the acute pain and bloody

¹Read at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists at St. Louis, Mo., Sept. 13-16, 1904.

discharge subsided, but she did not regain her former good health. Her physician named the disease "grip of the bowels," but made no vaginal examination. She consulted one of our leading gynecologists, who ordered hot douches and several months in bed. After about ten weeks symptoms referable to the rectum ceased; then constipation, heretofore mild, gradually increased in severity. Six months after this last childbirth my father first saw the patient. She was then having a chill nearly every day, with a temperature varying from 100 to 101°. The next week I saw her and found her in a deplorable condition, though not extremely emaciated. Her entire trouble was referred by herself to the difficulty in securing a passage of the bowels; the pain attendant thereon she described as "something terrible," with bearings down like labor pains. A movement was only secured by the repeated administration of large doses of powerful cathartics, and was accompanied by a distressing burning sensation in the rectum, which could not be relieved. The anus, she said, would at these times "draw up toward the inside," while the passage was "very small, like a baby's." Her other symptoms were accompanied by a persistent anorexia and daily vomiting, that threatened a speedy termination of life unless relief should be obtained. Her temperature remained two or three degrees above normal, the pulse being slightly accelerated, feeble, and easily compressible.

A physical examination revealed intestines moderately distended with gas, but no abnormality of other organs. A rectal examination disclosed, at 3½ inches, a firm annular stricture, so small and resisting that the examining finger could not be made to engage in it. On making a vaginal examination, the cervix was found free; that is, as free as is possible with a fixed fundus. The fundus was retroflected, drawn to the left and firmly fixed to the sacrum. Passing from the fundus laterally could be felt on either side a firm band, not sensitive to pressure, shorter and thicker on the left than on the right side. These bands occupied the site of the superior border of the broad ligament, passing off from either side of the uterus at its fundus, but did not extend throughout the width of the broad ligaments down to the cervix. Ovaries and tubes could not be differentiated.

Diagnosis was made of a retrodeviation of the uterus, with adhesions not only of the uterus but of the tubes and ovaries and posterior pelvic wall, associated with a stricture of the rectum, produced by the shortening of the broad ligament. The condition was considered to be of puerperal origin. The temperature,

chills, and other constitutional symptoms were thought to depend upon the absorption of ptomaines and toxins, the result of the retention caused by the stricture, rather than upon any active inflammatory process in the pelvis.

I operated the case in Charity Hospital, assisted by the house staff, and in the presence of Drs. G. C. E. Weber, Lucas, and W. J. Scott. The abdomen was opened by a four-inch incision, with the expectation of at least partially relieving the rectum by freeing the uterus and making a ventrofixation. The uterus was found retroflected, drawn to the left and fixed to the sacrum; so firm were the adhesions, and to such an extent had the cicatricial contraction taken place, that the peritoneum of the fundus had a white, glistening, bloodless appearance. The left tube and ovary were not found, but their site was occupied by a mass of new connective tissue. The rectum skirted along the promontory of the sacrum just above the fundus of the uterus, and dipped down into the pelvis to the right instead of to the left of that organ. The appearance of the pelvic peritoneum was very remarkable; the amount of adhesions and new connective tissue was much greater than we had expected from the history of the case. We still considered it due to a puerperal infection of severe type, and were surprised to find so much evidence of difficulty in the pelvis in a case having so little trouble following the confinement, especially in a case showing no active symptoms of inflammation. The appearance of the peritoneum was as though the patient had recovered from a very severe infection.

Commencing from above to free the rectum, the vermiform appendix was found adherent to its anterior surface; this was freed, and, being normal, was put over into its proper place. The tube and ovary, containing a small cyst, which ruptured during the manipulations, were next lifted from the rectum. Very little ovarian tissue was left, the most of it being substituted by cicatricial tissue. The right broad and the round ligaments were found to be very much shortened; these, reinforced by the inflammatory new connective tissue between the rectum and broad ligament, forming a firm stricture of the rectum. The broad ligament, including the round ligament, was cut between forceps well down into "Douglas's pouch," and the anterior and posterior layer of peritoneum stitched together on either side of the cut. On incising the broad ligament the retraction of the ends was very marked; an approximation of the fresh surfaces would have been impossible, even if desired, because of the great con-

traction of the tissues. No retraction of the abdominal peritoneum was noted. After stopping the oozing, and flushing the abdomen, the external incision was closed with silkworm gut. A rectal examination showed that the stricture had been immediately relieved.

Convalescence was uneventful. Following the operation the temperature at once dropped, and in two or three days was normal. The external wound healed by first intention, and the patient was able to leave the hospital in two weeks. One month after the operation I have in my notes the following: "Feels perfectly well. Cannot get enough to eat, and no discomfort from the eating. As soon as her head touches the pillow she is asleep; first restful sleep for six months. Bowels move every day, and has taken cathartic but once since coming home." To-day, six months after the operation, she says her health is better than ever before, which is surely not the usual result of the ordinary operation for stricture of the rectum. The foregoing history was reported at the Ohio State Medical Society in 1893, under the title, "Rectal Stricture of Puerperal Origin Relieved by Laparotomy." The following history has never before been reported.

This favorable condition lasted for about eighteen months, when she suddenly became ill, the symptoms being those of acute intestinal obstruction. Not being the family physician, however, I did not see her for four or five days; when I was called she presented all the features of a well-marked case of obstruction of the intestines, including stercoraceous vomiting, except that there was very little bloating. A diagnosis of obstruction of some of the first loops of the jejunum was made and immediate operation advised. On opening the abdomen, the reason for the lack of intestinal distention was evident; a remarkable condition was found in the pelvis. There was no ascites present, the first portion of the jejunum was greatly distended and congested, and many of the loops of the ileum and large intestine were collapsed. The exact point of obstruction could not be known, as it was not well-defined, but was produced by a large number of adhesions of the small intestine, which were located in the pelvis. A very great change had taken place in the appearance of the pelvic tissues; all loops of the intestine which dipped down below the brim of the pelvis were firmly adherent in a large mass of exudate. The pelvis looked as if some plastic material with the setting characteristics of plaster of paris had been poured into the pelvis, filling it full up to the brim; all of the intestines which

had come into contact with this were firmly adherent to it; no trace of any of the pelvic organs could be seen. Although this mass looked like organized plastic exudate, there were no evidences of recent inflammation. Vigorous efforts to relieve the intestinal obstruction proved futile, and the condition of the patient became such as to necessitate the closure of the abdomen without accomplishing the desired result. The patient died the next day.

A partial postmortem was held twelve hours after death; a careful examination was made of all of the organs of the thorax, abdomen, and pelvis; nothing of pathological import was found in the heart, lungs, pleura, pericardium, liver, spleen, pancreas, kidneys, abdomen or peritoneum except in the pelvis. The mass of exudate noted at the time of operation was so firm that an examination of any of the pelvic organs was impossible without the removal of the mass *in toto*; this proved to be quite difficult, as the substance was as hard as cicatricial tissue; an examination of a specimen was made by the pathologist of the hospital, who reported it to be of inflammatory origin; no evidences of tuberculosis could be found.

This class of cases was first described by Virchow, as long ago as 1853, and the German school of medicine seems to be the only one which has given it serious consideration. Von Bergmann divides chronic peritonitis into chronic exudative and chronic adhesive. Under the latter title, he says: "It is associated with the formation of adhesions, and cicatricial contractions of the peritoneal folds. It is most likely to occur in the neighborhood of the female pelvic organs, the gallbladder, a flexure of the colon, the root of the mesentery, or the omentum. The effect of the inflammation is thickening of the peritoneum, which later leads to contraction. Adhesions which may form between movable abdominal organs interfere very much with their function, and, indeed, may threaten life. Chronic adhesive peritonitis may follow acute inflammation in some abdominal organ. It may also follow injury or a laparotomy. But it may also develop in a chronic manner without such predisposing cause, or, indeed, without any apparent cause. In most cases, however, it is a secondary manifestation of obscure inflammation of some portion of the alimentary canal. The symptoms are usually well localized."

The description of von Bergmann is broad enough to include the above case, but he further says: "Surgical treatment may be demanded, either because of the degree to which chronic ad-

hesions interfere with the natural functions, or because they have produced some acute condition, such as obstruction of the intestine, which threatens the patient's life. If division of the bands and separation of the adhesions have no permanent good result, he believes in removing the starting-point of the inflammation, if this is possible. Thus, the points of attachment at either end of the fibrous cord may be excised. If the adherent surfaces are extensive, they cannot be treated in this manner unless the diseased organ is one whose presence may be dispensed with. Still, encouragement is found for operation in the fact that adhesions which normally form after every laparotomy disappear in the course of time."

My own case, viewed in the light of von Bergmann's remarks on treatment, seems not to belong to this class, because, after the removal of the right tube, the apparent complete obliteration of the left, and the entire relief of the rectal symptoms, the case did not tend to recover, but slowly progressed; nor did this progression seem to be an expression of the extent of infection or severity of reaction. If it belongs to this class at all, it would seem to be a sub-division with characteristics of its own. Among American authors this form of disease, until recently, has been entirely overlooked. Before quoting from them, the following case, involving more or less the entire peritoneum, reported by Dr. Wetherill, of Denver, will be of interest:

"Female, 45 years of age, was subject to attacks of vomiting, pain, and flatulency, accompanied and followed by frothy, yeasty, and very offensive stools.

"First Operation.—June, 1902. The vermiform appendix was removed, the right kidney fixed. In making the closure of the abdominal wound a total inability to approximate the peritoneal surfaces below the muscles was encountered. It did not then give us the impression of being thickened. No other pathologic conditions were found at this time, sixteen months before her death.

"Result.—The immediate result was to improve the general health and comfort of the patient. After about a year had elapsed, however, anorexia, nausea, vomiting, constipation, flatulency, and finally great rectal pain and tenesmus with reflected pains into the back and legs, developed. Examination revealed a mass underlying the upper end of the scar of the old incision, which seemed to involve the pyloric end of the stomach, and to be attached to the pancreas. A tight and rigidly undilatable stricture

of the rectum was found, one-third of an inch in diameter, three inches from the anus, and the pouch of Douglas was filled with a tumor, three inches in diameter, which seemed to be incorporated with the rectal obstruction.

"Second Operation.—September, 1903, the usual incision for an inguinal colostomy was made, and through this the pelvic and pyloric masses were examined. The pelvic tumor proved to be a solid neoplasm of the right ovary, and was tied off and removed. The rectal band was entirely distinct from it, and the pylorus and intestine were matted together in a huge mass, which was very adherent to the old scar. The detachment of these adhesions was impossible. The usual colostomy was made, and again the difficulty of the first operation was encountered in closing the wound. The contraction was much more pronounced than before.

"In three weeks an intestinal obstruction supervened and a third operation was performed. A firm attachment of the ileum to the under side of the inguinal colostomy was found; a resection of the ileum and a gastroenterostomy were made. Much difficulty was again encountered in closing the wound in the peritoneum. There was a general shrinking, thickening and contraction of the peritoneum everywhere, but it was most marked in the regions indicated as the favorite sites of the disease. There was no ascites, and no sero-fibrous or fibrino-purulent exudation on the peritoneum.

"The stomach wall was in places more than half an inch thick, and the gallbladder, duodenum, pylorus, and pancreas were so matted together as to be quite inextricable. The pancreas was so small and so infiltrated with connective tissue growth as to be almost cartilaginous in consistency. At three points the bowel was so tied down by contraction of its mesentery as to have its lumen greatly interfered with, and the caliber of the rectum at the point of constriction was reduced to a diameter of less than a quarter of an inch, with its walls quite three-fourths of an inch in thickness. There was also a firm stricture at the pyloric end of the stomach, of only about one-third inch in diameter. The mesentery of the small bowel was rather thickly studded with small miliary nodules, which were apparently not tubercular.

"Most curious of all was the condition of the kidneys, the right, which had been fixed at the time of the first operation, being so firmly attached as to make its removal almost impossible, and both the right and left kidneys presenting a condition of cystic degeneration or hydronephrosis, due to pressure on the ureters

by the shrinking fibrous posterior peritoneum. At the site of each of the former incisions through the peritoneum the viscera were firmly adherent to the cicatrices. The cut surfaces of the thickened stomach and rectal wall were white and glistening, and showed an enormous hyperplasia, or connective tissue growth. This was also true of the pancreas and the mesentery of the bowel, which was very much shortened and thickened throughout. Sections made from different parts, including both periphery and center, had the same general appearance. They consist entirely of connective tissue fibers and cells. The most notable feature of the cellular material is that it is in all stages of fatty metamorphosis. Bloodvessels are present in moderate number, and apparently have normal walls."

In perusing the literature of a rare subject, one is struck with the loose manner in which some authors use descriptive terms; confusion of nomenclature on the part of the author leads to confusion of ideas on the part of the reader. Vaughan says of peritonitis: "The exciting causes are pathogenic bacteria"; and also says: "Chemical substances and mechanical injuries excite a plastic or reparative peritonitis, which has no relation to bacteria." Nicholls notes this fact when he says: "We find that many writers of repute use terms such as 'peritonitis,' 'perihepaticus,' and 'perisplenitis' to designate a condition in which fibrous bands of adhesion connect the various viscera or transverse serous cavities, even in the absence of any sign of accompanying active inflammation. While, of course, such adhesions are an evidence of an inflammatory process, they are the result of such a process rather than the process itself. Now a result cannot be the cause; scar tissue is not the wound, nor are fibrous adhesions inflammation. It is obviously then incorrect and misleading to use a term like peritonitis to designate such a condition. We should prefer to restrict the term to those cases in which inflammation is actually in progress at the time of observation, since fibrous adhesions may be merely evidence of an inflammatory process long since past and gone." Yet the form we are considering to-day is one having the appearance of a healed inflammation; but notwithstanding this, it is distinctively progressive, as evidenced by the gradual extension of these apparent results. How shall we classify so contradictory an anomaly? Is it a variety of one of the rarer forms described by the authors, or a type *sui generis*?

Let us hastily review authors who have given any descriptions under which they may have classed this variety. Of the class of

cases in which there is a large amount of exudate, Nicholls says, under "Chronic Hyperplastic Peritonitis": "Anatomically speaking, the cardinal features are the production of more or less exudation into the abdominal cavity, and the production of fibrosis leading to the formation of sporadic elevated nodules on the peritoneal surface, or to a continuous fibrous membrane of considerable thickness and cartilaginous texture on the various viscera." Nothnagel uses the terms "peritonitis adhesiva or indurata," and says: "The fibrous adhesions are either delicate and thin, or coarse and thick. In the latter case they may form veritable masses of cicatricial tissue. When the adhesions are numerous and voluminous, the loops of intestine may be so firmly matted together that it is surprising that their contents manage to pass through the bowel."

Bauer has compared the appearance of the mass to a uterine fibroid, for both look like a large, undefined mass of connective tissue traversed by large tubes and canals. Klebs makes mention of "peritonitis deformans." Stengel, in his American edition of Nothnagel (page 760), quotes a case reported by Malcolm in which, after the removal of a large amount of fluid by tapping: "On opening the abdomen, a smooth, round mass filling the lower part of the abdomen was found. It felt like a cyst, and the condition was like that found when a broad ligament tumor raises the pelvic peritoneum high up into the abdomen. It was found to be resonant, and composed of matted intestine." These all seem to be descriptions of excessive inflammatory reactions in infective cases with large serous and fibrinous exudates.

Both Rokitsansky and Ziegler state that local thickenings of the peritoneum may arise from the irritation of a simple ascites. Frequently an acute peritonitis complicates those diseases associated with ascites, such as cirrhosis of the liver and Bright's disease, but, as yet, it has not been made clear in how far this event is due to secondary infection rather than to simple mechanical irritation of fluid.

In another class the peritoneum is affected with other serous membranes. As a rule, the upper part of the peritoneum, the pericardium and pluræ, are the parts affected. The disease may begin acutely with fever, rigors, pain in the epigastrium, and tenderness in the hepatic region. Other cases develop insidiously, and do not come under observation until the ascites is well marked. An excellent account of this is given by A. O. J. Kelly, which he describes as "multiple serositis." In this class, which

starts usually as a pericarditis, will be found the "pericarditic pseudocirrhosis" of the liver described by Pick in 1896, the "iced liver" (zuckerglusseber) of Curschmann, described in 1884. These two are most interesting descriptions of an extensive inflammatory involvement, but of more than one serous cavity.

Nicholls rightly says: "Much interest attaches to the question: What part does tuberculosis play in peritonitis? Louis held that every case of chronic peritonitis was tubercular. But this is certainly incorrect. It is quite possible, however, for the tubercle bacillus to produce a hyaline and productive fibrosis of the peritoneal membrane, quite comparable to the simple form. Within recent years numerous observations have been made tending to show that tuberculosis of the serous membranes and of the various organs is not necessarily a destructive process, but is, on the contrary, occasionally a constructive one; caseation may be slight or absent, while fibrous hyperplasia is in excess.

"Analogous to this is that peculiar form of lymph-adenitis which, clinically, may be taken for Hodgkin's disease, until the discovery of the specific bacillus reveals the true nature of the case. Why the disease should take this form is difficult to say, unless it be, as Lartigau has suggested, that we are dealing with a bacillus of very low virulence.

"In the hyperplastic tubercular peritonitis the ascites is not likely to be so great as in the simple form, and may, indeed, be absent. I would like here to emphasize the similarity in appearance between the simple and tubercular forms of hyperplastic peritonitis. The resemblance between the two may be so striking that only a microscopic examination of the nodules, with the demonstration of the presence or absence of the tubercle bacilli, will reveal the true nature of the case.

"Another type of chronic hyperplastic peritonitis of tubercular origin is of great practical importance. I refer to a more or less localized form in which a tumor-like mass is produced. The great omentum may be matted into an irregular lump, or the process may be most marked in some part of the intestinal tract, notably, about the appendix and cecum. In other cases the small and large intestines have been found contracted into a ball. This form is liable to be mistaken for carcinoma. Lartigau has collected the literature on this subject. It is important to recognize this variety, for many cases are amenable to operation, and, of course, the prognosis is very much better than in the cases of carcinoma. In a case, reported by Lartigau, of a very peculiar form of hyperplasia with-

out caseation, the disease was proved to be tubercular, and was entirely confined to the wall of the bowel without accompanying peritonitis. Extensive peritoneal adhesions may, however, form a similar tubercular mass involving the cecum, as in a case reported by Koerte. In other cases the great omentum has been involved as well, as shown by Routier and Tedenat." The fact that so many authorities consider all peritonitis as tubercular is the only argument for classifying the cases reported to-day as such, since neither the characteristic tubercular lesions nor bacilli were found in any case on record.

Another form of hyperplastic peritonitis is that associated with carcinoma. It is well recognized that sero-fibrinous or fibrino-purulent peritonitis may complicate a carcinoma of the peritoneum, but occasionally the disease may assume a hyperplastic form, and extend over a long period of time. Some time ago I performed an autopsy on a case which had been ten years in developing, and in which there was a diffuse carcinomatous thickening and infiltration of the peritoneum and tissues of the abdomen and scrotum. The stomach was small and the walls thickened and firm. The intestines were similarly affected. The kidneys, pancreas, testicles, prostate, and bladder were removed with great difficulty, on account of the dense infiltration with which they were surrounded. Even this variety may require a microscope to differentiate it from the cases under discussion.

Osler, under "Proliferative Peritonitis," says: "Apart from cancer or tubercle, which produce typical lesions of chronic peritonitis, the most characteristic form is that in which the essential anatomical feature is great thickening of the peritoneal layers, usually without much adhesion; there is usually moderate effusion, more rarely extensive ascites. The peritoneum is opaque, white in color, and everywhere thickened, often in patches. The omentum is usually rolled, and forms a thickened mass transversely placed between the stomach and colon. The peritoneum over the stomach, intestines, and mesentery is sometimes greatly thickened. The liver and spleen may simply be adherent, or there is a condition of chronic perihepatitis and perisplenitis, so that a layer of firm, almost gristly, connective tissue encircles these organs. On account of the adhesions which form, the peritoneum may be divided into different sacs. In these cases the intestines are usually free, though the mesentery is greatly shortened. This proliferative peritonitis is found frequently in the subjects of chronic

alcoholism, and is observed especially in hepatic cirrhosis, but attends tumors, chronic passive congestions, and the like."

Well-marked cases, of whatever kind, may be easily referred to their appropriate classification, but there are many patients with extensive adhesions in which it will be extremely difficult to decide whether the case is one of local reaction, the result of a healed severe infection, or whether it is still progressing and should be classed as a case of chronic adhesive peritoneal sclerosis. The following history illustrates such a condition: Mr. W., a bartender, had good health until several years before his death; some three years prior to my treatment of him the late Dr. Wenner operated upon him, and found a small, contracted gallbladder, with firm adhesions between it and the duodenum; the removal of the gallbladder and freeing of the adhesions gave relief to the gastric symptoms, but in a few months he was as bad as ever. Dr. Wenner then did a second laparotomy, and found the adhesions more extensive; a thorough freeing of these again gave temporary relief. After Dr. Wenner's death the patient fell into my hands. I found him in an extremely miserable condition, with marked evidences of a pyloric obstruction and a large ventral hernia; no ascites or edema were present; at the third operation extensive adhesions were found throughout the upper part of the abdomen, involving the liver, stomach, colon, and omentum. A gastroenterostomy was performed; in order to do so, the entire field of operation had to be developed by separating the extensive adhesions. The patient died by a re-formation of the adhesions causing obstruction. This case looked at first as if it were a case of peritonitis, the result of a gallbladder infection; there was a tendency to extension, although there was no great hypertrophy of the connective tissue.

The essential characteristic of chronic adhesive peritoneal sclerosis is an extensive subperitoneal infiltration with contraction. The disease begins in an insidious manner and runs its course without active symptoms, and without ascites or sero-fibrous or fibrino-purulent exudate. If ascites be present, it is the result of some intercurrent disease which has ascites as one of its features; or possibly, if the peritoneum of the transverse fissure of the liver be seriously affected and a decided encroachment upon the caliber of the portal vein ensue, an ascites might supervene. But this active symptom would be due to the failure of the portal system to perform its normal functions, just as an intestinal ob-

struction would be the expression of the failure of the intestine to perform its normal functions. The disease appears primarily to be an affection of the subperitoneal and visceral connective tissue, the adhesive features supervening later.

The ensemble of characteristics seems to demand for this peculiar disease a separate classification. The German name of chronic adhesive sclerosing peritonitis expresses a preconceived idea of the pathology, which may or may not prove to be correct. Is it not better to give it a name which will accurately describe the disease?

Chronic adhesive peritoneal sclerosis is a terse definition of the condition, and implies nothing which might later be proved untrue. In discussing this disease with my friend, Dr. Crile, of Cleveland, he tells me that he has a female patient upon whom he has performed three laparatomies for intestinal obstruction. Her disease has been unattended by active symptoms, except the symptoms of obstruction; there has been no ascites, and yet at operation he has found each time a more extensive adhesion, with an ever-increasing amount of exudate.

While chronic adhesive peritoneal sclerosis is undoubtedly rare, the paucity of recorded cases is probably not a correct index of its frequency. It is to be hoped that members of the profession who have opportunity will note carefully similar cases, in order to determine its etiology, and possibly find some means of curing a disease which at present seems to be incurable.

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531 PROSPECT AVENUE.

VAGINAL CESAREAN SECTION IN GRAVE CASES OF PUERPERAL ECLAMPSIA.¹

BY

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PUERPERAL eclampsia, like every other morbid condition, is found in various degrees of severity. In mild cases it may attack the patient suddenly and pass off, leaving her in good condition, recurring days or weeks later, perhaps just as mildly, or as a very severe attack. As a rule, a physician is called during the first attack; he can then investigate the case and treat it properly by judicious diet, hygiene, and by the administration of such remedies as will help to eliminate urea and other excrementitious material. If this management proves successful, the patient may be allowed to go on to term, or at least until the child is viable.

If, however, the treatment is of no avail, or the symptoms increase in severity, especially the headache and the eye symptoms, he can at his leisure bring on premature labor by the use of the sterile bougie or other appropriate means, when the process is slow and more like natural labor,—that is to say, where it takes from twelve to twenty-four or more hours to accomplish delivery.

When, however, the patient objects to premature delivery before the viability of the child, we are confronted by a serious condition, and all our ingenuity is taxed to carry along the patient until that time. Fortunately, nature sometimes comes to our rescue. The accumulation of toxins in the system brings on labor prematurely and the patient is safe. Sometimes, however, se-

¹Read at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists, held at St. Louis, Mo., Sept. 13-16, 1904.

quelæ remain, such as defective vision, impaired hearing, or paralysis of certain muscles.

In the present state of our knowledge we are absolutely at sea to account for the variations in this condition. One patient at the first attack will be seriously affected; in fact, sometimes the first attack continues until the patient dies. In other cases the patients will have a dozen or forty or fifty seizures and finally recover. There are some things beyond our ken, and this is one of them.

But then I was not to write on general eclampsia. I am simply making a few introductory remarks to emphasize the subject of my discourse,—namely, that vaginal Cesarean section is indicated in grave or serious cases of eclampsia, not in the mild attacks that can be managed by cathartics, diaphoretics, veratrum, premature labor, and the like. I refer only to those very serious attacks, whether it be the first, second or third, where the convulsions do not cease and one attack follows another in rapid succession until death ends the scene if there is not heroic intervention.

In these cases all the chance the patient seems to have is prompt delivery. I know that sometimes convulsions do not occur until after the birth of the child, but these are so rare that they only emphasize the rule. The experience of all is that the convulsions cease as soon as delivery has taken place, or if some recur after the delivery, they are milder and usually end in recovery.

When I had a large obstetrical practice I tried the various means then in vogue for rapid dilatation, especially the hand; also the dilators then in use, such as rubber bags, multiple incisions in the cervix in various directions, and similar devices, all of which proved very discouraging. When Dührssen, of Berlin, first suggested what he termed vaginal Cesarean section for the purpose of rapid delivery, it seemed to me a most plausible method of procedure. When I read of the powerful steel dilator devised by Bossi and others, that method appealed to me; but after observing the reports in the journals and learning that it was a very formidable instrument, that the uterus often tore in a direction unexpected instead of simply dilating, and that the result was often fatal, then I made up my mind that the strong steel dilator had only a limited use. As a surgeon, I naturally came to the conclusion that the correct procedure would be purely surgical, where one had everything under control and knew exactly how far he was cutting or had to cut, and where he could sew up and thus repair the parts immediately, leaving the par-turient canal in a good and nearly normal condition.

I see but few such cases now, and only in consultation, and I have been able to operate on only three, short reports of which are herewith given.

CASE I.—Mrs. F. T., aged 26; primipara; six and one-half months pregnant; was suddenly taken with convulsions while working in a flower garden, March 17, 1901. Dr. Clippert was called, and gave her chloroform and the usual remedies, but the convulsions continued and he sent for Harper Hospital ambulance, a distance of five miles. She was kept under chloroform while in the ambulance, and on arrival at the hospital immediately prepared for operation. She was put profoundly under the influence of chloroform. With the retractor in place, the cervix was grasped with vulsellum, and with scissors on each side an incision made up to the junction of the vagina and uterus. The incision was carried a little further inside the uterus, so as to cut the fibers of the internal os. The bag of waters was ruptured, small forceps applied and the child delivered, but which lived only half an hour. This part of the procedure took but seven minutes. The placenta was removed and the uterus thoroughly irrigated. Five catgut sutures were now used on each side to sew up the incision. During delivery the cut was extended by tearing upward and considerable hemorrhage ensued, but this was readily controlled by the sutures. The placing of the stitches took eight minutes, so that the complete operation occupied only fifteen minutes. The woman made a quick and perfect recovery, returning home in two weeks.

CASE II.—Mrs. C. R., aged 41; mother of three children; pregnant eight months and a half. She was suddenly taken in the evening, February 17, 1903, with severe convulsions. She was subjected to the most vigorous treatment, chloroform, etc., without avail, by Dr. Meddaugh. I was called the next morning at nine o'clock, twelve hours after the onset of the convulsions. Although they were terrible, I would not risk any operation at her home, but immediately sent her to the hospital in the ambulance. She was prepared in the usual manner and, with the retractor in place, I separated the bladder from the uterus by making an incision across, one and a half inches long, separating the bladder up to the peritoneum, which was not opened. With a knife I now made a clear cut in the median line of the uterus upward to the internal os, applied forceps and made a quick delivery. It took just ten minutes, but the child was dead. The placenta was removed, uterus irrigated and the incision sewed up, which took

another ten minutes. She made a complete recovery, although absolutely blind for two days, and for three weeks regions of her vision were absent; but absorption gradually took place, and she now is perfectly well in every way.

CASE III.—Mrs. W. H., aged 40; married six years; pregnant for the first time, six months and a half. She was taken with convulsions at ten o'clock at night. Drs. Southworth and Root, of Monroe, were called. They gave chloroform, croton oil, and, in fact, employed the most vigorous treatment. Nevertheless, one convulsion succeeded another, and I was called by telephone, the distance being forty miles. I arrived in the afternoon at four o'clock, November 1, 1903. She was under chloroform then, and I immediately proceeded to operate. With the retractor in place, I put one vulsellum forceps on each side of the cervix and pulled it down as far as I could. I made an incision across about an inch and a half at the junction of the uterus and the bladder, which allowed me to separate the latter to the internal os. With a knife I now made a clear cut in the median line of the uterus up to the internal os. The bag of waters was ruptured, forceps applied, and a dead child delivered. This took seven minutes. The placenta was removed and dry sterilized catgut used to sew up the incision in the uterus, which bled but very little. A few stitches were also used to sew up the mucous membrane in the vagina. The operation was completed in fifteen minutes. The woman made a perfect recovery.

In former times we sometimes made incisions in the cervix on each side, but sometimes also anteriorly and posteriorly, to enable us to deliver the patient. In my first case I made incisions on each side, but found that during delivery the incision would tear up into the plexus of the broad ligament and a good deal of hemorrhage took place.

With the careful perfection of this operation by Dührssen, and by following his technique, I found only one incision to be necessary, and this directly in the median line anteriorly. The cut can be carried upward into the body of the uterus with very little hemorrhage. We must, however, cut through the mucous membrane across the cervix at its junction with the bladder for one and a half or two inches, just as is done in vaginal hysterectomy. The bladder can be pushed up out of harm's way, and the peritoneum need not be opened at all. Any amount of room necessary can be obtained, and delivery very quickly made. It seems to me that any general practitioner can do this; certainly any surgeon who

has had some experience in vaginal work can have no trouble with a prompt and sure delivery and saving the patient.

In conclusion, I would say :

First: In grave puerperal eclampsia, as a rule, prompt delivery will save the patient.

Second: That manual effort with the fingers and the hand is too slow.

Third: Powerful steel dilators are not always at hand, and often cause serious injuries.

Fourth: Vaginal Cesarean section enables the obstetrician to quickly and safely deliver the woman.

620 WOODWARD AVENUE.

DR. E. GUSTAV ZINKE, of Cincinnati, Ohio, had no hesitation in saying that in grave cases of puerperal convulsions it was best to empty the uterus as soon as possible. Much valuable time was lost in trying to relieve the patient by other means, although he was free to admit that there were many cases of puerperal convulsions which might be treated in a medical way successfully. But when the case was a grave one; when the convulsions were frequent; when the temperature rose with every convulsion and albuminuria increased, the attacks becoming longer in duration, he did not think any time should be wasted. He differed with Dr. Carstens, in that every general practitioner ought *not* to be permitted to interfere in these cases, if he had the opportunity to secure the help of one who was well-qualified and well-equipped to do work of this character. Great harm was done in these cases simply because every practitioner felt himself called upon to treat them.

The digital method of dilating the uterus, or balloon dilatation, was out of place here. Cervical incisions had been practised for quite a number of years, but they were limited to the os rather than the cervix, and largely when there was rigidity of the os. Cervical incision, as prescribed by Dührssen, meant a long, deep cut through the cervix; while by vaginal Cesarean section was meant separation of the bladder from the uterus through a transverse incision in the anterior cul de sac, in order to make a long cut in the anterior cervix and lower segment of the uterus not covered by peritoneum. It was an easy operation for anyone who was skilled and experienced, who had a thorough knowledge of the parts, but he did not think the general practitioner should be permitted to do this work unless he was able to secure the help of one who was as skilful as any of the Fellows. We owe a debt of gratitude to Dührssen for perfecting vaginal incisions, or vaginal hysterotomy. This operation could be easily done and the uterus united afterward. The operation

was attended with no shock; hemorrhage was hardly ever severe, except when the cut was continued during the delivery of the child; but this could be guarded against at once by putting a suture in the upper angle of the wound. One should not be hurried in the performance of cervical incisions, or vaginal Cesarean section, for cases of puerperal eclampsia until he was absolutely satisfied the case could not be treated in any other way. Only in those cases in which it became evident that prompt emptying of the uterus would avail the patient should the operation be resorted to.

DR. H. W. LONGYEAR, of Detroit, believed the operation of Dührssen was exceedingly valuable and had come to stay, and would take the place largely in competent hands of the old methods of dilating by rubber bags, etc., which had been so extremely unsatisfactory. We should use, however, medical means, venesection, etc., which had been so useful often in stopping the convulsions, before resorting to operative procedures.

He took exception to the statement of Dr. Carstens that any general practitioner could do this operation. The general practitioner was unaccustomed to working in the vagina surgically. Naturally, he did not understand the tissues very well, and he was not capable of doing that operation. Of course, there were a few men who were surgeons as well as general practitioners who, no doubt, could do this operation, but they were the exception and not the rule. He did not think the statement should go out that it was recommended that the general practitioner could do this operation, as it would be a great mistake.

DR. MARTIN STAMM, of Fremont, Ohio, said that the woman he operated on Sept. 5, 1903, and whose case he reported at the Chicago meeting of the Association, gave birth to a child last July at seven and a half months. She did not wait for the doctor's arrival, but was delivered in about half an hour and was well to-day. The baby was living.

There was one point omitted, he said, which Dührssen mentioned, and which he also mentioned in his paper, namely, he (Dührssen) was not a stickler in regard to the anterior incision. He thought in most cases it was better to make an anterior and posterior incision, and in this way it would enable the general practitioner to undertake the operation, as the incisions then would not have to be made so long and deep. It was sometimes better to make an incision in the portion that presented itself best, and he found that Dührssen agreed with him in his report of a number of cases in the *Centralblatt für Gynäkologie*, No. 13, 1904, and thought the idea a good one. Sometimes a case presented in which one could not get at the anterior portion as well as at the posterior portion, and in such a case it was well to make a short incision in the anterior portion and a longer one in the posterior, and push up the peritoneum as far as one could. It was not necessary in every case of puerperal convulsions to make vaginal Cesarean section. He thought it was only indicated in cases in

which one could not dilate the uterus rapidly, and without too great violence. Attempts in dilating the uterus with force, as *accouchement forcé*, mentioned by Dr. Zinke, had a depressing effect on the patient, and were apt to produce convulsions.

DR. M. W. MYER, of Columbia, Mo., stated that in a primipara, for instance, in whom the cervix was not effaced and the os not dilated, Cesarean section was probably indicated at once. But what he desired to know was, would the essayist, in a case where the os was somewhat dilated and where the cervix was effaced, resort to Cesarean section or first try the Bossi dilator, or some other means of dilatation? He had found that the Bossi dilator could be used to advantage where the cervix was partially effaced.

With reference to the posterior incision, he had only had occasion to see one case of vaginal Cesarean section for eclampsia. In that case the physician made a posterior incision, disregarded the peritoneum, as it was necessary to get a sufficiently long incision, and as a result the patient died from peritonitis.

He had one case in which he thought of doing vaginal Cesarean section. The patient was a primipara, in whom the external os was partially dilated, and the only thing which prevented manual dilatation or the use of the Bossi dilator was the internal sphincter. By making a simple incision through the muscle fibers of the sphincter, he was enabled to dilate the os in a few moments.

DR. HENRY SCHWARZ, of St. Louis, said it was unfortunate that this rather extensive incision of the cervix was called a Cesarean section. It was confusing to physicians who were not well informed as to the nature of the operation. Really, it was simply an addition to our means of rapidly dilating the lower parturient canal; it belonged to the same class of operations as *accouchement forcé*; it had come to stay, and it was a valuable means of dilating the cervical canal. A proper name should be found for it, as it was not, strictly speaking, a Cesarean section, and it was never intended to take its place.

DR. E. GUSTAV ZINKE said there was a distinct difference between cervical incisions and incisions of the os. The incisions Dr. Myer referred to were only incisions of the os when the cervix was dilated, and these did not amount to much. Cervical incisions not only included the vaginal, but supravaginal portion of the cervix, the internal os, and so-called vaginal hysterotomy would be a proper name, and not Dührssen's vaginal Cesarean section, although he thought, out of compliment to the work Dührssen had done, he was perhaps entitled to that consideration. In some cases not only the cervix was incised, but the lower segment of the uterus up to the peritoneal fold. If an anterior incision answered, it should be the one preferred; if not, the incision should be made posteriorly. The cervix should not be incised laterally, because it gave rise to severe hemorrhage, and the incision might have to be enlarged during the delivery of the child.

DR. MYER stated that Dr. Zinke had misunderstood him. He did not mention his case as one of Cesarean section, because he fully appreciated what that was. He mentioned the case to see whether or not Dr. Carstens would have done Cesarean section in a similar instance or not, or would have resorted to a similar incision. He did not even make Dührssen's deep cervical incisions in his case, but a small one in the internal sphincter, which could be felt as a distinct band contracting on his finger. This was the reason he made an incision through the internal sphincter, disregarding the cervical canal entirely.

DR. CARSTENS, in closing the discussion, said, with reference to making the incision posteriorly, a short cut in the cervix was not sufficient; the internal os must be opened, but one would cut into the peritoneum if he made the incision posteriorly.

He did not think any attention should be paid to the condition of the os in some cases; whether it was partially dilated, whether the internal os was obliterated or not, or whether the woman was in labor; it depended upon the character of the convulsions. If the convulsions were mild, this operation should not be done, but should be reserved for the severe and grave varieties of puerperal eclampsia. All other cases could be treated on general principles.

Replying to the remarks of Dr. Longyear, he said that the young general practitioner who knew anything and had the welfare of his patient at heart, and who looked after his reputation, would go and see his patient when he could. If, however, that same practitioner was in a predicament, there was no help to be got, and he had a desperate case and thought the woman was going to die, having seen many operations of various kinds, he should try to do this operation himself, and perhaps he would succeed. While he might not sew up the wound as accurately and artistically as some practitioners, yet he would deliver the woman, save her life, and would, doubtless, get some one else to sew up the lacerated cervix later. But the man who did not know enough to call in counsel when it was necessary was beyond help.

DR. SCHWARZ asked whether Dr. Carstens had ever delivered a full-grown child through the anterior incision of Dührssen.

DR. CARSTENS replied that one child was delivered at eight and a half months; another at six and a half months. It made a difference whether the child was full-grown, or whether it was living or dead.

PURULENT CYSTITIS WITH SYMPTOMATOLOGY RESEMBLING APPENDICITIS.¹

BY

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THE conditions found in a little patient were such as to justify the foregoing title, and may be summarized as follows:

George W., aged seven, was attended by Dr. Louis Linss of Cincinnati for an ordinary attack of scarlet fever, from February 25 to March 18, 1904. Three days later, that is to say, March 21, Dr. L. was called again to see the boy, on account of a swelling of feet and hands. On the morning of April 1 all edema had disappeared, urine was highly colored, but normal in quantity; no sugar, albumin, or casts; the child ate a good breakfast, slept soundly, played about the room, and seemed apparently well.

That afternoon Dr. Linss called to see the patient, as he had a bad chill, vomited, and was suffering with a pain in the abdomen; temperature $99\frac{1}{2}^{\circ}$, pulse 90.

April 5 the patient had two more attacks of vomiting, pain in the abdomen was constant, and he had not slept for twenty-four hours; temperature 102° , and pulse 130.

Dr. William Johnson saw the case with Dr. Linss, and upon examination of the abdomen they found an uneven swelling, which extended to the umbilicus and over the right lumbar region. Upon palpation, exquisite tenderness developed over the appendix. A diagnosis of appendicitis was made, but further consultation was asked for. The next day, April 6, I was called, which was six days after the initial vomiting spell and chill, since which time the child had been crying and moaning day and night and could not sleep. His face wore an anxious expression and was covered by a cold, clammy sweat, with dark semicircles under the eyes; sordes on the teeth, and the tongue was very dry; temperature 102° , pulse 132, very irregular; abdomen swollen, especially so on the right side, and such marked tenderness that the child screamed if the lightest pressure was made over the region of the appendix; bowels constipated, and the urine highly colored. Considering the

¹Read at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists at St. Louis, Mo., Sept. 13-16, 1904.

irregularity and intermittency of the boy's pulse and his feeble condition generally, we considered it wise to postpone operating for twenty-four hours, hoping, by means of stimulants, to get him in a more favorable condition.

The following day there was no improvement, the pulse being even worse. The child had moaned and cried all night with the intense pain, was profoundly exhausted, had refused nourishment, and the temperature still remained at 120° .

Before placing him on the operating table, a bed-pan was placed under him and he passed nearly a pint of urine. Chloroform being administered, an incision on the right side two inches in length was made over the most prominent portion of the swelling. It revealed a dark-colored sac and a number of adhesions. The incision was lengthened to three inches; some adhesions were broken down with the finger, but a few of them were so firm that they had to be cut. The enlarged opening gave us a field of about two inches to work in, and this sac in appearance was not unlike that of a gangrenous bowel. We were at a loss to say exactly what it was and, as adhesions limited the field, gauze therefore was packed about opening, the child turned to right side, and a half-inch cut was made into the sac. A dark-green fluid spurted out, which had a strong, heavy odor of stale urine. About two quarts of fluid was evacuated and a finger was introduced into the sac, which proved to be the bladder. The opening into the bladder was sewed up, the adhesions binding the bladder on top to the abdominal wall and on the right side to large and small intestine were broken up, and the enlarged, thick-walled viscus was dropped back into the abdominal cavity. The appendix and appendiceal region, except for the presence of some adhesions, was normal. An opening was left in the abdomen for gauze drainage, the rest of the wound being closed.

The subsequent history was as follows: the bladder was emptied by means of a retention catheter for forty-eight hours; after that time catheterization was done night and morning for three days. There was a gradual decrease in pulse and temperature, and in seven days both were normal. On the third day a quantity of fluid drained out through the opening, but this gradually ceased and on April 23d, sixteen days after the operation, the abdominal wound had closed, and the patient now enjoys good health.

This case is of interest because:

1. It presents an unusual history.
2. The symptoms and history following scarlatinal nephritis

led us to suppose that we probably were dealing with a case having appendicitis as a complication.

3. The patient urinated regularly, and at no time was there dribbling of urine.

4. The presence of adhesions and the enlarged bladder (with its thick walls) have only problematical causes, not explained satisfactorily by the history of the case.

361 EAST THIRD STREET.

DR. D. TOD GILLIAM, of Columbus, said he had never had a case of this kind in the male in which there was a suspicion of appendicitis, but on several occasions similar cases in females had come under his observation. He recalled two cases in females. In one there was a tumorous mass in the abdomen, which was accompanied by many of the symptoms portrayed by the essayist, and he discovered it to be due to retention of urine. One case gave him a great deal of uneasiness subsequent to operation. He was called to a neighboring city to see a woman who had a tumor. She had been married for a number of years, but had borne no children. She had consulted a number of surgeons with reference to her condition. On examination, he found the abdomen exquisitely tender and largely distended, with acceleration of the pulse. She was suffering day and night, despite the use of narcotics. He could not map out anything very definite. He made inquiry in regard to the urine, and was told that the patient was passing urine. Very soon afterwards he made arrangements to operate, although he could not satisfy himself as to the nature of the tumor. He asked the nurse the next morning with reference to the urine before the woman was brought to the operating table, and she informed him that the woman had been passing urine all night. Placing the patient on a table at its edge, one of the assistants introduced a long catheter and withdrew about a pint and a half of urine. Still the tumor remained. Dr. Gilliam then made an incision, and came down upon a dark sac. He investigated and found there were universal adhesions. He could not get to the pelvis at all. He made an incision into this sac and out came considerable urine. As there was some suspicion that the woman had a nephritis, he closed the opening, and thirty-six or forty-eight hours after this the woman miscarried. He did not know what the age of the fetus was, but it was probably about three months. Subsequently the woman died.

What he wanted to emphasize was the fact that sometimes there was a reservoir in such cases in which there was an accumulation of urine. An expert should use the catheter in these cases, so as to insinuate it beyond the reservoir into the great retention cyst cavity. In this way valuable lives might be saved.

DR. THOMAS B. EASTMAN, of Indianapolis, Ind., said that ordinarily one felt he could diagnosticate appendicitis readily, and when he first read the articles of Maurice H. Richardson in which that gentleman discussed appendicitis and its complications, he felt he was quite competent to differentiate between pneumonia and appendicitis. However, in the early Spring there came under his observation a boy, eight years of age, whose case had been diagnosed as appendicitis. Physical examination of his chest and the consideration of the boy's temperature, pulse, and appearance showed distinctly that he had some lung complications. He therefore asked an internist to see the patient with him. It was determined that the boy had pneumonia, and the physician was rather dubious as to whether he had appendicitis at all. Dr. Eastman could not believe the boy did not have appendicitis, and said he might have pneumonia and appendicitis at the same time. He operated, and immediately after the operation the boy began to pursue the usual course of cases after operation for appendicitis, and the symptoms of pneumonia subsided. Whether or not the boy had pneumonia he did not know. He certainly had appendicitis, and the symptoms of pneumonia subsided promptly after the operation.

GUNSHOT WOUND OF THE ABDOMEN—REPORT OF A CASE—
EIGHTEEN PERFORATIONS—INTESTINAL RESECTION
(5 FT. 7 IN.); WITH MURPHY BUTTON—RECOVERY.¹

BY
JOHN D. S. DAVIS, M.D.,
Birmingham, Ala.

I PRESENT a recent clinical history that embraces interesting features relating to the methods of dealing with gunshot wounds of the abdomen, involving the intestines:

Mrs. Phillips, a white woman, 23 years of age, of Stoutt Mountain, Ala., while attempting to place a rifle in a rack on the wall, the gun was discharged with the muzzle about eight inches from the abdomen. The bullet, a thirty-two caliber, entered in the median line midway between the umbilicus and the symphysis pubis, ranging backward, upward, and to the right, and was deposited in the muscles of back on the right side. The ball in traversing the abdomen made eighteen gut perforations, and two cuts in the intestine that went down to the mucous membrane.

¹Read at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists at St. Louis, Mo., Sept. 13-16, 1904.

Sixteen of the perforations and the two seromuscular wounds were in the small intestine, and two perforations in the transverse colon. The bullet cut two mesenteric arteries, which caused a large quantity of blood to escape into the abdomen.

The patient was shot at 4:30 o'clock in the afternoon of February 2, 1904, and was brought a distance of eighty miles on a freight train to Birmingham by her physician, Dr. W. O. Watson, and carried to Hillman Hospital. At nine o'clock I saw the patient and had her prepared for section. Her temperature at this time was 102° and pulse 130. She probably had fever at the time she was shot.

A seven-inch incision was made in the median line, a large quantity of blood turned out, and the bleeding vessels controlled by hemostatic forceps. The two perforations in the transverse colon were so near the mesenteric border that I stripped up the mesenteric serosa and turned the mesenteric border in, as though the two openings (one on each side) had been one large opening, including the mesenteric border, and closed with interrupted silk sutures. I then brought the mesenteric folds back and sutured over the wound. Four perforations and two seromuscular cuts in the small intestine were turned in and closed with small loop silk sutures. Two perforations were situated so close together that they had to be closed by flexing, pouching, or looping the mesenteric border, the bowel being bent on its convexity, so the two wounds could be closed as one large wound by interrupted longitudinal loop sutures sutured in line of the axis of bowels. There were two other perforations that could have been closed by suture, but the openings were between two mesenteric perforations on one side and eight on the other, and I thought it better to lose one more foot of intestine than to do two resections.

I resected that part of the intestine containing the ten mesenteric perforations (sixty-seven inches), including the two large perforations, in the convexity of the ileum, and closed with the third size Murphy button. The resected bowel and its mesentery were removed, the vessels ligated, and the gap in the mesentery closed with interrupted silk sutures. The abdomen was flushed with hot normal salt solution; plain gauze drainage was used, and I closed abdomen with through and through wormgut sutures.

The operation lasted an hour and a half; normal salt solution hypodermically and strychnine were given. Nausea lasted twenty-four hours and was troublesome, increased, probably, by the morphine that had to be given for pain and restlessness. The

drainage was removed on second day. The patient was in a ward with three pus cases, and on the eighth day she developed a small mural abscess, due to infection through a stitch that traversed the drainage track. The button was passed on the twenty-first day, and she left the hospital March 1, 1904. A week later she was doing housework, and is now perfectly well. The temperature and pulse gradually declined, until the normal was reached on the seventh day, and, but for the infection referred to, her convalescence was uninterrupted. Success in this case was due to early operation, which was begun in five hours and completed in less than seven hours from the time she was shot.

I desire to exhibit in this connection a metal button, which is made in four sizes like the Murphy button, except it has no spring. The spring serves no good purpose, is an additional expense, and makes the button more difficult to apply. I also desire to show a metal horseshoe button which I had made to take the place of my catgut horseshoe plates which I have been in the habit of using to close large wounds on the convexity of the bowel, without destroying the mesenteric border by resection. I exhibited this button recently before our local society of Birmingham as a substitute for the catgut horseshoe plate, but on further trials I find it not so practical as the catgut plates.

The two wounds in the convexity of the bowel, which were so close together that they had to be closed as one by flexing the bowel and suturing longitudinally (looping the mesenteric border), were suitable for the use of the horseshoe plates, but I had none at hand at that time.¹

For a long time I discarded all devices except the catgut horseshoe plates for closing large wounds on the convexity of the bowel, but finally I began the use of the Murphy button in my intestinal work, which I have for some time applied without the spring. And instead of the catgut plates I have used the metal horseshoe button, though it is not yet perfectly satisfactory. I am now at work on a hinge horseshoe button, which I hope to make practical.

2031 AVENUE G.

¹In the year 1889 I read a paper before the Southern Surgical and Gynecological Association upon an experimental study of intestinal anastomosis, in which (Transactions S. S. and G. Assn., 1883) I illustrated my catgut plates and horseshoe plates.

DR. JOHN YOUNG BROWN, of St. Louis, Mo., congratulated Dr. Davis on his brilliant piece of surgery. At the last meeting of the Association, held in Chicago, the speaker reported twenty-three cases of gunshot and stab wounds of the abdomen, and also discussed the technique of this character of surgery. His experience in this line of work had taught him that the results to be obtained were dependent: (1) upon the time of operation; (2) upon the manner in which the operation was done. Since his report at the Chicago meeting he had operated on quite a number of cases, and had gradually evolved a technique at the City Hospital at St. Louis which he thought was about as good, and was followed by as good results, as anyone could possibly adopt.

In all cases of gunshot wounds of the abdomen he was convinced that the proper incision was the median, as through it one could get at all the viscera if it was made in the proper manner.

In contradistinction to gunshot wounds of the abdomen, there were stab wounds of the abdomen. In the latter, he thought it was wise, if the wound was located near the side of the abdomen, to go in through the stab incision, because the bowel at this point was fixed, and one could generally locate a wound in the gut through an incision of this kind. But in a gunshot wound of the abdomen it was absolutely essential that the entire abdominal viscera be gone over, for the reason that one might sew up six holes and leave one hole, and then the object for which the operation was performed was defeated.

Another most important point in dealing with conditions of this kind was the character of search that was made. After making a median incision, a search was made in this manner: the stomach was examined fore and aft; the liver and spleen were then gone over. Beginning at the angle of Tritz, the small intestine was followed to the ileocecal valve. The ascending, transverse, descending colon and sigmoid flexure were then examined. A systematic search of this character would preclude the possibility of overlooking injuries to peritoneal contents. It was bad surgery to enlarge a wound in the anterior wall of the stomach to determine whether there was a wound in the posterior part of that viscus.

In dealing with perforations, he quite agreed with Dr. Davis that it was very much more prudent to resect bowel where the perforations were in close proximity to one another (and one could resect six as well as he could two feet) than to close multiple perforations, leaving bowel of doubtful nutrition, perhaps with strictures which would interfere with the passage of fecal matter.

In regard to the irrigation of these cases, about the only class of abdominal cases he ever irrigated now were gunshot wounds of the abdomen. Irrigation in these cases was very important. As a rule, there were multiple perforations, attended with the extravasation of fecal matter, with blood gravitating to the fossa on either side and to the pelvis, and in addition to the mechanical cleansing effects of the irrigation it was used frequently early

in operation to combat shock. It was the best method of giving hypodermoclysis he knew of. If one started the irrigation immediately after the patient had shock the result of bleeding, after opening the abdomen, the peritoneum would absorb saline solution rapidly, and it was the best method of combating shock with which he was familiar.

As to the method of making anastomosis, this was a character of surgery in which it was essential to do quick work to get good results. He had had quite a large experience in the use of the Murphy button, and he was convinced that of all methods of making the anastomosis, the button was by long odds the most perfect in work of this kind. In cases of this character where the patient was suffering from multiple perforations, hemorrhage, and was badly shocked, anastomosis could be made with the button very much quicker than by any other method, and the results were much more satisfactory.

As to the character of closure in cases of this kind, the incision must of necessity be a long one. As it was made in the median line, it was exceedingly important in all cases where it was possible that one should close with tier stitches, with reënforcement of silkworm gut or silk, for this reason: in the last year he had had two cases, one recently, of gunshot wound of the liver, and one just after he came back from the Chicago meeting. One of the patients was a policeman, in whom he resected seventeen inches of bowel for seven perforations. His condition was bad at the time. He closed the wound through and through; the patient got along nicely for five days, then complained. The dressings were removed and the intestines found out on the abdomen. The patient was chloroformed, the intestines were put back into the abdomen, and no unpleasant results followed. Another similar case was related.

In regard to drainage in these cases, he never used gauze in the abdomen in a gunshot case if he could avoid it. In gunshot wounds of the liver it was absolutely essential that they be plugged; the patient would bleed to death if the surgeon tried to sew. They must be tamponed to stop hemorrhage. In the abdomen he never used a gauze drain. If the gauze drain was used in the abdomen, in a short time it would be found that the intestines were glued into the meshes of the gauze, and the surgeon would have a good deal of difficulty in pulling the gauze out. He did not believe it did any good as a drain. The method he used was to close the abdomen tightly and put a glass tube in the pelvis through a stab above the pubes, and as soon as the patient's condition permitted he was put in the exaggerated Fowler position and drained with this glass tube for twelve or twenty-four hours, just as some used to do, and as the speaker still did, in the pelvis after pus cases.

DR. WALTER C. G. KIRCHNER, of St. Louis (by invitation), narrated the case of a man who was shot with a 32 caliber revolver in the lower part of the abdomen, the bullet entering

between the umbilicus and a little to the right of the median line, taking a direction toward the left. The man's abdomen was explored and it was found that there were numerous perforations. Examination was made in a systematic manner, and in close proximity to one another four perforations were found, the intestine being so badly lacerated that resection was necessary. At this site a Murphy button was inserted and an anastomosis made. Further examination showed that there were other perforations, and it was necessary to make a second resection. This anastomosis was made with the Connell suture. Altogether, about four feet of intestine was resected. The patient recovered, so far as the surgical injuries were concerned. The Murphy button was passed on the fifteenth day; but on the eighteenth day, while convalescing, he was suddenly seized with pulmonary hemorrhage, from which he died. An autopsy was made, and it was found the trouble was due to a tuberculous focus. There was no peritonitis. This gave the speaker an opportunity to examine the intestines. At the autopsy it was difficult to find the line of union of either the Murphy button or the Connell suture. The intestines were therefore removed intact and further search was made. The Murphy button anastomosis could only be detected by the thickening that occurred in the mesentery. The Connell suture anastomosis was also found in this way. There were two at this site. Over three feet of intestine was resected, and the mesentery had contracted until it was no larger than an English walnut. The union was perfect.

DR. LOUIS FRANK, of Louisville, said that much of the success of work in this class of intestinal surgery depended not only upon the time that the patient came to operation after the receipt of injury, but upon those points that had been so ably brought out by Dr. Brown, namely, thoroughness of search, the overlooking of no wounds in the intestine, and absolute control of hemorrhage. Not infrequently hemorrhage was a cause of death when the wounds in the gut themselves had been completely and thoroughly closed, especially hemorrhage post-peritoneal. He had seen this cause death in more than one instance when there was closure of the wounds themselves. Rapidity of closure was important. He believed we could work much more rapidly with the Murphy button, but personally he preferred to use the suture, and by preference catgut suture, believing it was better for this purpose than the use of silk. In some of the experimental work he had done on dogs he had found, in examining them a short time after operation, some of the silk sutures dangling inside the gut. This was an important point, and might be a not infrequent cause of trouble.

Thorough drainage was another important point in obtaining recoveries in these cases and should never be overlooked, and the tubular drain was undoubtedly the best for this class of cases.

DR. WILLIAM D. HAGGARD, of Nashville, said that a point of importance in intestinal suturing was the use of the Pagenstecher

linen in lieu of silk. The advantages were that there was no capillarity to the linen. A piece of silk thread could be thrown into a glass of water, which would show the capillarity of the silk; whereas, no leakage took place in the linen. Applied to the intestinal tract, if infection occurred when silk thread was used, it would travel by capillarity; whereas, with the linen suture the infection became localized and nature would take care of it. In all surgery, therefore, of election on the alimentary canal, gastroenterostomy, anastomoses in benign and malignant cases, the Pagenstecher linen suture was preferable to silk. It was strong, and just as easily rendered sterile.

He mentioned a case of multiple perforations of the intestine in which a double anastomosis with Murphy buttons was made. One of the buttons passed on the ninth day and the other on the twelfth, with a satisfactory result.

DR. JAMES F. W. ROSS, of Toronto, spoke with reference to the methods adopted in intestinal resection. On one occasion he did three resections and used three Murphy buttons, but, unfortunately, the patient died. It was a satisfaction to hear the Murphy button spoken of as it had been. It was not a perfect device. He had sometimes thought that if we could make a *papier maché* button we would have something that would be lighter, strong enough to answer the purpose, and, after a time, would break down in the interior of the intestine, which would be better than metal. He had been tempted sometimes to have some of these made.

Experiences were not always favorable with the use of the button, and he reported a case in which a man died from gangrene of the right leg after the use of the Murphy button in a gastroenterostomy. Post-mortem examination revealed evidence of the artery being blocked. This was the only unfavorable case in his practice from the use of the button.

He mentioned one other case, in which he resected several feet of intestine for tuberculous disease and closed several holes, and the man had just recovered, when he had a severe attack of pleuro-pneumonia. Pus formed in his pleural cavity; he was afterwards operated upon by a prominent surgeon in San Francisco, who did an Estlander operation. The button never passed, and he had an idea that one of the buttons used worked its way up into the pleural cavity and had not been found. However, the button might have passed and not have been found by the nurse in attendance.

He thought the future of intestinal surgery lay largely in the use of the button, but that surgeons should make some endeavor to get rid of this foreign body, and that could yet be accomplished by some one.

The speaker mentioned the constant use of hot salt solution during the performance of all these operations. Instead of having the nurse rinse out the sponges and place them on the intestines, one should have clean towels and keep them hot by

having warm water run over the surface of the towel instead of re-dipping the towels. In many instances where one wanted to eviscerate he could pull the intestines out through the incision, as long as he kept them warm. It was the chilling of the surface of the intestines that produced trouble.

DR. JOHN YOUNG BROWN said he never had known the button retained in any case. He did not use the button in gastroenterostomy work. In one case the button was retained for some time, but a skiagraph showed it, and finally the button was passed without any trouble.

DR. HERMAN E. HAYD had one patient now in whom the button had been retained for five months, and in another it was retained six weeks.

DR. J. HENRY CARSTENS said the Murphy button was a mechanical device which the surgeon ought to get along without, if possible. On account of its weight, sometimes it did not pass, or because the intestine became kinked and adherent, forming a stricture, through which it was difficult for the button to pass.

It was his practice to get along without any mechanical device if he could possibly do so, and to suture the intestine with absorbable ligatures, such as catgut. If the intestine was sewed with catgut it might not last long, especially if there was tension; there might be leakage, and the patient might be lost as a result. In a number of instances he had used fine catgut ligature, trying to bring the ends of intestine together, making a running over and over suture, not pulling it tight. This allowed the mucous membrane and muscular coats to become agglutinated. If this was not enough, he would reënforce it by using a Czerny-Lembert suture of silk.

DR. HENRY C. DALTON, of St. Louis (by invitation), said there were two or three points in the discussion of gunshot wounds which occurred to him while the gentlemen were speaking, and the first one was that when the abdomen was opened in a case in which there were multiple perforations, it was very important to find all of the perforations at once. He remembered a case he operated on where he closed three or four perforations, and in pulling the intestine farther out found that he had overlooked a perforation that was bleeding profusely. The patient was suffering already from acute anemia. It was important, therefore, to find all perforations at once and close those that were bleeding.

Regarding the median incision, ordinarily speaking, he thought Dr. Brown was correct; but if one knew the direction in which the bullet went, and it struck two inches to the left of the median line and came out in a direction which would naturally follow from its course, he saw no reason for opening the abdomen in the median line. If one made an incision in the right or left linea semilunaris, he would have a better control of the field and could get more directly at the condition of affairs. The surgeon could not always tell the direction of a bullet.

DR. HERMAN E. HAYD could not but feel that it was a little

unfortunate that Dr. Dalton should have taken up the matter of making the incision, for he thought Dr. Brown had demonstrated in a very satisfactory manner that if the surgeon had a stab wound of the abdomen to deal with, he should go in at the site of the stab; but with a gunshot case the incision should be made in the median line, because the probabilities were the intestines would be wounded at many points, as it was always uncertain where the bullet went.

DR. WILLIAM H. HUMISTON said there was one point he wished to bring forward in connection with cases of gunshot injury, where the injury was at all extensive and there was much shock, and the shock was usually increased by a comparatively long operation, and that was, the beginning of saline injections (submammary) at the time the operation was begun. One could take a double canula, insert it in both breasts, and during an operation of say thirty minutes to an hour he could get from two to three quarts of hot salt solution taken up by the breasts, and the patient would leave the table in a much better condition than she or he went on. In his cases of abdominal surgery, where there was evidence of weakness, where the pulse was feeble, he made it a routine as he started the anesthetic to begin the administration of saline solution under the breast. In long cases of suppuration, where the outcome was in doubt, where there was extensive breaking up of adhesions, abscesses to remove, one could remove the patient from the table in from thirty minutes to an hour in a better condition than she or he went on.

DR. RUFUS B. HALL said that the essayist ignored the spring in the Murphy button, and stated that he (Davis) obtained just as good results without the spring in the button, but that theoretically the spring was correct. Why? Because the constant pressure after the button was pressed together induced necrosis of this portion of bowel that was turned in over the edge of the button, which must be necrosed before the button could pass on through the intestine. The reason the button was retained in some cases was because this necrosis did not take place, and when the button did not pass the button spring was not correct, or the button had not been thoroughly pressed down when the intestine was dropped back into the cavity. He had used the Murphy button frequently; he did not know that he was any more careful than other surgeons, but there was one thing he always looked after, and that was to send the button home snugly. The button spring should be in good order, and a button ought not to be used a second time unless there was a new spring in it.

DR. WILLARD BARTLETT, of St. Louis (by invitation), said, in referring to the remarks made by Dr. Ross regarding gangrene, that he had had some experience in reference to it and had come to the conclusion that gangrene was due to ligating the mesentery too far back, not close enough to the intestinal border. When one ligated close to the intestinal margin, in the little triangle that was left, there was no chance for thrombosis to occur in the

mesentery. When one ligated farther back, at the bifurcation, sometimes there was a thrombus formed at that point, unless the gangrene extended farther on. In the work he had done he found that when he ligated close to the intestine no gangrene occurred.

DR. DAVIS, in closing the discussion, thanked Dr. Brown for his extended remarks, although he differed with him in regard to some points. His (Brown's) recommendation to make a median incision in cases of gunshot wounds of the abdomen was wise. In stab wounds one could well afford to follow the wound, because he could estimate somewhat the extent of the damage done.

As to the Murphy button, it was the most admirable mechanical device surgeons had for intestinal anastomosis. However, he did not think the spring was really necessary, and what Dr. Hall had said theoretically was not true practically. If the button was clamped sufficiently tight, it would cut off all the blood supply of the diaphragm portion into the intestinal portion. It would slough away, leaving no diaphragm. If one failed to do so, the spring was not sufficient to cut off the blood supply. He had demonstrated this conclusively in his experiments on dogs.

He was surprised to hear Dr. Brown's statement in regard to the through and through suture. He had put in these sutures in his experimental work on dogs and upon human beings, and he had never seen the escape of the abdominal viscera after putting them in. These sutures were inserted about one-third of an inch apart. He thought Dr. Brown must have inserted his too far apart, and undoubtedly that was the cause of the trouble he had.

As to the use of gauze, he did not pack gauze in the abdomen as he did when the solid viscera were injured, but used gauze wick protected by rubber dam.

As to the use of morphine, he did not give it after any abdominal section if it could be avoided.

As to suture material, he did not use catgut in his intestinal work either on man or dogs. It was too risky. Silk was the most reliable, and he had not encountered any difficulty from its use.

THE RELATIVE VALUE OF THE MEANS AND METHODS EMPLOYED IN ACCOUCHEMENT FORCÉ.¹

BY

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It is doubtful whether any other subject of midwifery has received so much attention on the part of obstetric writers as this during the last four years. The general interest that every absterician and gynecologist must necessarily have in the subject

¹Read at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists at St. Louis, Mo., Sept. 13-16, 1904.

is excuse sufficient for presenting it at this meeting. To obtain and maintain a thorough understanding and a lasting intimate acquaintance with this important chapter of obstetrics, we cannot speak of it too often or discuss it too much. This is all the more true because of the still wide difference of opinion among well established authors and teachers of no mean distinction regarding the relative value of the various methods employed to rid the pregnant uterus of its contents by force, at any time, from the fifth to the ninth month (inclusive) of gestation.

There are two distinct varieties of accouchement forcé: (a) the rapid, and (b) the slow method of delivery.

(a) Represents those cases in which the condition of the mother, and sometimes that of the child, demands a prompt and rapid termination of the pregnancy.

(b) Represents the class of cases in which the delivery of the child may be effected slowly, because of the absence of immediate danger to the mother and the existence of a justifiable disregard of the life of the fetus.

In the first variety of instances an hour consumed by the operation to effect delivery may be much too long; in the second, twelve or twenty-four hours, or even more, may be a period sufficiently short to complete labor with comparative safety to the mother, and occasionally to the child.

The tampon, bougie, rupture of the membranes, and the like, for the purpose of inducing labor are well understood, and therefore will not be considered here. The other methods resorted to in accouchement forcé may be conveniently enumerated and considered in the following order:

1. The graduated steel or vulcanite dilators and the branched or bladed dilators.
2. The bag, or hydrostatic dilators.
3. The manual dilatation of Harris, and the bimanual dilatation of Bonnaire and Edgar.
4. The superficial and deep cervical incisions and Dührssen's vaginal Cesarean section.
5. The conservative Cesarean section.
6. Bossi's and similar metal dilators.

1. *The graduated steel or vulcanite dilators and the branched or bladed dilators* (of Hegar, Sims, Ellinger, Goodell, Palmer, Reynolds and others) have no other object than to open up, partially only, an unobliterated cervix or rigid os, preparatory to either digital, manual, or bag dilatation. Any one of these di-

lators do very well for this purpose. It is, however, necessary to add that they must be very carefully manipulated in order to avoid rupture of the amniotic sac. (The Bossi dilator, and other instruments of similar character, will be considered further on.)

2. *The bag or hydrostatic dilators.*—Braun's colpeurynter (1851) was first, accidentally, introduced into the uterus by Madurowicz in 1861, but systematically employed as a uterine dilator (hystereurynter or hysterynter) by Schanta in 1883. Because of its elasticity it would frequently escape from the uterus, with or without traction, creating but little or no dilatation. Baum used a hog bladder to overcome this difficulty, and Champetier de Ribes (1888) constructed an inelastic bag of several sizes, and which is now well known by his name. Boissard (1894) and Lucas (1897) modified, respectively, the Champetier de Ribes and Braun balloon by rendering the upper portion of the bag flat, or even concave, in order to prevent displacement of the presenting head or breach. Since then balloon dilators have been constructed of varying materials, shapes and sizes by Müller, Munich; Bauer, Stettin; Vorhees and Coe, New York. However, the Champetier de Ribes balloon is still in great favor with most operators. Barnes fiddle-shaped bags (1862) are no longer considered of any value. Meurer, Coblenz (1884), suggested and practised gentle traction upon the balloon in cases of placenta previa.

Hydrostatic dilatation is regarded by many, if not most, of our obstetric authorities as the best, safest and most natural method of hystereurynter for accouchement forcé. Some believe it applicable in all cases, under all circumstances, and have called it a blessing. It is unquestionably an excellent procedure in some cases, but, as we will see, by no means applicable in all instances; nor is it an operation devoid of danger. It is true, bag dilatation induces promptly contractions of the uterus, promotes steady, gradual dilatation, and acts as an efficient tampon. For the induction of prompt uterine contractions, however, the condition of the mother must be, at least, fair; for steady and gradual dilatation, time is a much-needed requisite; and, as the best tampon is efficient only in the presence of "controllable" hemorrhage, it becomes evident that bag dilatation is indicated, mainly, when the mother's condition is good, or nearly so; when time is not an important element as to the safety of either mother or child, and when uterine hemorrhage proceeds from a lateral or marginal placenta previa rather than from a central implantation of this

organ. In the latter form of ectopic placenta the child's life is at once sacrificed, and the mother's life is seldom saved when bag dilatation is the method of forced delivery. The same may be said of *ablatio placentæ*, if labor is effected by the aid of the balloon. It is doubtful whether this method is advantageous to the mother in either the light or severe form of eclampsia, unless it be to hasten a labor already begun. Hystereuryesis has, undoubtedly, a tendency to precipitate and increase the number and duration of the eclamptic attacks.

Notwithstanding, the field of application of balloon dilatation is not small. It is the best method in premature rupture of the membranes; uterine atony; malpositions of the fetus, either before or immediately after rupture of the amniotic sac, when dilatation of the os is slow and irregular; in prolapsus of the cord; prolapsus of the feet, and especially in the lateral and marginal varieties of placenta previa, when the balloon may be introduced on the side opposite to the ectopic organ, and thus successfully arrest the hemorrhage from the site of the detached portion, without necessarily interfering completely with the circulation of the still adherent part of the placenta upon the other side.

Objections to and contraindications of balloon dilatation.—Dührssen and others have pointed out, long since, the disadvantage of all artificial dilatation of the cervix, namely, that thinning and effacement do not occur under mechanical attenuation; when in bag dilatation traction is added, the cervix is dragged down, not drawn up, as in natural labor. Continuous traction by weight or hand constitutes a source of peril not to be disregarded or treated with unconcern. Rupture of the lower uterine segment is the danger of prolonged and undue traction upon the balloon. Leopold claims, and not without good reason, that the danger of sepsis can never be entirely excluded. The bag is not, as a rule, easy of introduction, and lacerations are apt to occur. Hartz asserts that the danger of infection is increased by the long and intimate contact of the balloon with the cervical tissue, and the necessary exposure of the parts during its employment. Meurer, too, speaks of the uncertainty of asepsis of the Champetier de Ribes balloon, and that it is liable to rupture. Displacement of the presenting part by the balloon, and immediate prolapse of the fetal extremities upon its removal, are objections worthy of consideration. Balloon dilatation is contraindicated when the head occupies the pelvic cavity; in the presence of sepsis in the vagina:

placenta previa centralis; and when the cervix is hard, uneffaced, and the canal closed.

Bag dilatation is, to a certain extent, deservedly in favor at home and abroad. The hundreds of cases reported by Dührssen, Biermer, Zimmerman, Silbermann, Ahlfeld, Kuestner, and Holt all attest to its great value in well-selected cases, though the fetal mortality is quite high—from 60 to 65 per cent.

Dührssen, Kuestner, Graefe, and Blacker rupture the membranes before the introduction of the balloon.

Martin, Ahlfeld, Meurer, and Kaufmann seek to keep the membranes intact, and try to insinuate the bag between the membranes and the uterine wall.

My own experience has been that the membranes are ruptured in spite of all care, in the majority of cases, during the introduction of the balloon, and that its occurrence has but little influence upon the subsequent progress and final result of the case.

Pape and Schifffen have recommended gradual filling and distension of the balloon, and that the bag should never be tensely filled, in order to avoid weak and cramp-like pains. The latter attaches a two-pound weight after two to four hours have elapsed.

3. *The manual dilatation of Harris and the bimanual dilatation of Bonnaire and Edgar.*—Harris's method implies the introduction of the whole hand into the vagina in the beginning, and into the uterus subsequently. The Edgar-Bonnaire method compels more or less continued exposure of the parts involved in the manipulation. These are strong objections. Shock, lacerations, hemorrhage, and sepsis are not infrequent complications even in cases well suited to this method. Invalidism is often a consequence, and demands operative measures for relief sooner or later. Many, if not all, of these complications and sequelæ may be entirely avoided in some cases, and reduced to a minimum in quite a number of others, if the cases be well selected and the operation carefully and skilfully executed under the most rigid aseptic precautions. Neither method should be adopted unless the cervix is completely or nearly effaced, and the os patulous and readily dilatable. This, indeed, is true of all cases, but especially so if the patient be a primipara. While it is admitted that manual and bimanual dilatation are justifiable procedures under circumstances favorable to their execution, it is pertinent to remark that the life of the child as a rule, and that of the mother occasionally, is sacrificed under these two methods. Both methods are

taught with great earnestness and much emphasis by recent writers and textbooks (Edgar, Williams, Hirst, and Webster), and they are practised extensively and indiscriminately the world over by the skilled and experienced, the awkward and ignorant alike. The result is that disasters and tragedies are frequently observed, but seldom published.

To illustrate: Williams⁵, who is the author of an admirable textbook on obstetrics, reports thirty cases of eclampsia which occurred in his own practice, with a maternal mortality of 23 per cent. and a fetal mortality of 40 per cent. In one of these cases he admits that the death of the mother was due to the operation. His patient was a colored girl, aged 17. The cervix was unobliterated and the os closed. He first tried Harris's method of dilatation and failed. Goodell's dilator was next employed; this was followed by Hegar's graduated dilators, after which only the little finger was admitted into the os. This in turn was succeeded by the introduction of a medium-sized Champetier de Ribes balloon, which, at the end of sixteen hours, failed to bring about further dilatation. Again Harris's method was resorted to, and with it a dead child was delivered by version and extraction. The mother succumbed promptly to a fatal infection. Williams confesses to an "ill-judged zeal" in this case, and admits "a justification for Cesarean section."

The same author reports another case in connection with the one just cited: patient is V-para, pregnant seven months, and the victim of placenta previa. Cervix shows stellate lacerations. External os patulous. Internal os readily admits finger. Treatment: Harris's method of dilatation, perforation of placenta, version and slow extraction of child. Result: deep tear in the left side of the cervix, extending into the lower uterine segment and giving rise to incomplete rupture of the uterus and subperitoneal hematoma. The patient died within an hour after delivery.

These two cases are not quoted with a view of reflecting upon the distinguished author, but to show what may be expected of manual dilatation under certain conditions. Everyone of experience knows that Williams is not the the only one of skill, knowledge, and good judgment who has been so unfortunate. He had the courage and honesty to report these cases. It is impossible to say that much of many of his confrères.

But here is the vital point: if it is possible that results of the character just cited are obtained by men known to be well fitted and highly qualified for obstetric work, what may we expect of

men in general practice who attend women in confinement and who have been taught that the above course of procedure is not only justifiable, but proper and comparatively safe? Nothing is more fatal to the life of these unfortunate patients than to shift from one method of treatment to another and back again, and finally, as has been done in some cases, make a Cesarean section. It is this sort of management that has brought disaster to homes and discredit to the profession. Involuntarily the thought suggests itself that the lives of the two patients in the instances just quoted might have been saved by deep cervical incisions or celio-hysterotomy. But as long as men of acknowledged authority will not admit that it is better to make a vaginal or abdominal hysterotomy before precious time is lost and the patient injured and exhausted, there is little hope, and tragedies in the confinement chamber will continue to multiply.

4. *The superficial and deep cervical incisions and Dührssen's vaginal Cesarean section.*—Incisions of the os, when the cervix is completely effaced, have been practised with good results, time and again, ever since Baudelocque. They were recommended by Coutouly (1808), Simpson (1847), Bedford (1843), by Braun, Skutch, and many others. They have been more frequently performed in ordinary labor when rigidity of the os caused great suffering, undue prolongation of labor, and when chloral, morphia and other remedies failed to secure relief.

What concerns us most are the deep and long incisions of the unobliterated cervix, as described, practised and recommended by Dührssen (1890). They are indicated when the cervix is hard and intact; when there is marked elongation of the portia vaginalis; when the cervix is the site of extensive and unyielding cicatrices, or of malignant disease. Cervical incisions are recommended in conglutination orificii externi, in premature rupture of the membranes, generally contracted pelvis, eclampsia, heart disease, articulo mortis, threatened rupture of the uterus, placenta previa, ablatio placentæ and other conditions demanding rapid delivery.

Kerr¹⁰ reports four successful cases of deep cervical incisions: one of rigidity of the cervix, two of eclampsia, and one of pernicious nausea with continuous vomiting. Webster⁹ reports a successful case of extensive kidney lesion, in which at the end of the seventh month of pregnancy the cervix was four inches long. Stamm¹⁹ read a very interesting paper on this subject before this Association last year, in which he cites a number of cases operated

upon by others, and two of his own, with excellent results. My own personal experience with deep cervical incisions during the past two years comprises five cases: two of persistent and pernicious vomiting, the period of pregnancy being at the sixth month in each; one of eclampsia, pregnant seven and one-half months; and two of placenta previa, pregnant six and six and one-half months, respectively. All the children were delivered alive by version and extraction, but died soon after birth. The mothers lived. There is, indeed, no necessity of multiplying cases. The literature is replete, and is growing larger every day, which demonstrates the value of this method of accouchement forcé.

The incision or incisions, as the case may be, are made in the median line; as a rule, anteriorly, sometimes posteriorly, occasionally in both places, and should extend from the os externum to the os internum, inclusive. The portio vaginalis is completely divided at once; the portio supravaginalis and the os internum only one-half or two-thirds their thickness. In the presence of excessive cicatrices or malignancy, the incisions must be carried through the entire mass of the diseased tissue; indeed, in the latter cases Dührssen's vaginal hysterectomy, followed by vaginal hysterectomy after the uterus has been emptied, should be performed, provided the adjacent tissues are not irremediably involved.

It should be understood that there is a vast difference between "cervical incisions" and "vaginal Cesarean section." In the former the cervix alone is cut; in the latter the anterior cul-de-sac is divided first, and the separated tissues and the bladder are then forced away from the uterus as high as the peritoneal fold before the cervix and lower uterine segment is incised in the median line anteriorly.

Many of the objections made to cervical incisions and vaginal hysterotomy are not well taken. Holmes⁴ mentions infection, hemorrhage, and extension of the incision during labor. Hofmeier¹¹ reports two cases in which the scars produced by deep cervical incisions proved a great disadvantage in subsequent labors; in both of these cases a rupture was found in the uncovered uterine wall, due to the imperfect union of the incisions of the cervix made in previous labors. Autopsies revealed the tears and large, subperitoneal hematomata.

It cannot be denied that these complications and sequelæ, one and all, may arise. They are either the result of conditions already existing at the time of the operation, or they may be brought about by accident or carelessness. But this is true of

any and all the methods resorted to in accouchement forcé, and, it seems to me, especially so in bag, manual, and metal dilatation, in every one of which sepsis, hemorrhage and laceration are liable to occur. An incision has a distinct advantage over a tear, because an incised wound unites quicker and better than a lacerated one. There is but little time expended in the production of a cut with the knife or scissors, and the violence of digital, manual or metal dilatation, which usually precedes and often causes the tear, is absent. Cervical incisions, superficial and deep, as well as vaginal Cesarean section, must be recognized as very valuable means in accouchement forcé. The profession owes Dührssen a debt of gratitude.

5. *The conservative Cesarean section* does not, as yet, occupy an unchallenged position among the means resorted to in forced deliveries, as ordinarily understood by the profession at large. There are still a few authorities, here and abroad, and a very large majority of obstetricians and general practitioners on both sides of the Atlantic, who firmly believe and advocate that Cesarean section should not be performed except in the presence of insurmountable mechanical barriers within the parturient canal. "Save the mother! Never mind the child!" is the cry often heard in medical assembly halls, and frequently quoted in professional literature. It sounds well to say this, and the exclamation becomes all the more impressive, principally upon the laity, because in a certain sense it is true. What we should say is: "If, after due reflection and consideration, it is impossible to save both mother and child, save the mother!" If by disregarding the life of the child we could always save the mother from an untimely death, or even only permanent invalidism, who is there who would say aught against the first exclamation? The truth is, that in the past as well as in the present the life of many an unfortunate mother has been needlessly lost by disregarding the interest of the child about to be born. Let me confess that I have observed in my own practice, as well as in the practice of others, the death of pregnant women as the direct consequence of persistent, vain and fruitless, though heroic and sanctioned, efforts to deliver them of their offspring, dead or alive, *per vias naturales*. Often the attempts made at delivery have been justly described and truly characterized as vicious, brutal and offensive in the highest degree, yet strictly in accordance with every rule of the art prescribed and described in textbooks and indorsed by teachers of obstetrics of to-day. Is it necessary to cite cases? I think not.

The writer was much pleased when, a short time ago, he read the report of a case of Cesarean section for placenta previa by one of our fellows, Deaver, of Philadelphia.²⁰ He states that he selected this operation "because more familiar with its technique, and therefore more likely to have success than with podalic version." He saved both mother and child. It is a matter of conjecture only what the result would have been in this case had she been subjected to forcible dilatation of the cervix, separation or perforation of the placenta, version and extraction of the child, even by one of Philadelphia's skilled and experienced obstetricians. This patient is to be congratulated on having fallen into the hands of Dr. Deaver. More need not be said.

As an argument against the more frequent adoption of celiohysterotomy in accouchement forcé, it has frequently been asserted of late that most of the obstetricians and general practitioners are more familiar with the use of the tampon, bag, manual and metal dilatation; with version, forceps and embryotomy than with the technique of Cesarean section; and that those possessed of the necessary knowledge and skill to perform this operation should not select it until they have failed with any, several, or all of the methods of forced labors.

This is an argument as unsafe as it is unwise. Considered from an aspect of modern surgery, the ground assumed is absolutely untenable, to say nothing of the fact that the record of all the cases of placenta previa, for instance, in which the conservative Cesarean section was chosen from the start as the best method of extricating the patient from her precarious condition has never been excelled. Men who can be taught successfully to apply the tampon, dilate an os or cervix manually, or introduce the Champetier de Ribes balloon can, even with more ease, acquire the technique of Cesarean section. The general practitioner who is not well prepared for nor sufficiently familiar with all the means and methods adopted in forced deliveries had better call to his aid, or turn over the case at once to, one who is quite qualified and amply equipped for work of this kind. In fact, patients of this kind should all be taken to a hospital.

R. L. Dickinson⁴ has aptly expressed it when he says: "The man who would not wish to have the carotid of his patient tied in any but the most favorable hospital surroundings has it in his mind that it is right and proper to face a far more alarming hemorrhage unaided, in a dusky apartment, on his knees between the bed and the wall. If, then, a certain number of such cases call

for technical ability of no mean order, let us save the lives in the future by recognizing this class as in the domain of major surgery and, forearmed against danger that may always be foreknown, place the patients where they can be properly cared for. The day cometh, and now is, when grave operative delivery belongs in the operating room as truly as does the appendicectomy or ruptured tubal gesttion."

To this we may add: The obstetric specialist and teacher not perfectly familiar with gynecologic and abdominal surgery, is like a captain of an ocean liner who is deaf, dumb and blind. As long as the sky is clear and the sea quiet, little will be required of him; but let a storm come up, a fire break out or any other accident occur, some one else will have to take his place or the ship will be lost. As with the captain and his ship, so with the obstetrician and his patient. Both should be well prepared, and able to cope with any emergency.

Cesarean section for accouchement forcé will be rarely necessary. It should never be performed unless the child has attained, at least, the seventh calendar month of gestation and manifests signs of life and vigor. This, in the presence of placenta previa, ablatio placentæ, or eclampsia, associated with a hard, closed cervix, and perhaps a malpresentation of the child and primiparity, would constitute an almost definite indication for this operation. If promptly and properly done under these circumstances, Cesarean section entails less risk to both mother and child than any other mode of delivery, except it be Dührssen's vaginal hysterotomy or deep cervical incision. But even these should not be considered if evidence exists which points to the slightest disproportion between the parturient tract and the child to be born.

6. *The Bossi and similar metal dilators.*—The metal dilators spoken of in the beginning of this paper are intended merely to open the cervix or os sufficiently to permit the introduction of one or two fingers, or some other instrument with which to effect delivery. The Bossi dilator and its competitors were intended for the avowed purpose of displacing deep cervical incisions, and vaginal as well as abdominal hysterotomy. The following metal dilators are considered of value:

- (1) Bossi's, four blades.
- (2) Frommer's, eight blades.
- (3) Kayser's, eight blades.
- (4) Krull's, one three and one eight blades.
- (5) Raineri's, five blades.

- (6) Preiss's, four blades, easily sterilized and cheap.
- (7) Schwarzenbach's, four blades and tulip-shaped.
- (8) Müller's, two blades, constructed on the principle of a glove stretcher.

(9) Knapp's modification of Bossi's dilator, substituting wire netting or rubber for the caps of the dilating points.

It is well known that, but for Leopold's recommendation of the Bossi dilator, this instrument in particular and metal dilatation in general would have received far less attention during the last few years than it has. It would be a needless waste of time to dwell upon the merits and demerits of each of the dilators mentioned. As the Bossi dilator is regarded as the most perfect and effective of them all, its advantages and disadvantages belong alike to all of them, and differ only in degree. The usefulness of the Bossi dilator as extolled at first by its inventor, then by Leopold (1901), and thereafter by Meyer, Copenhagen; Beck and Knapp, Prague; Peters, Dresden; Langhoff, Emden; Paoli, Genoa; Brothers²¹ and Dickinson, New York; by Lederer and others may be stated as follows:

(a) It secures complete dilatation of the uterus at any period of the third trimester of pregnancy, whether the cervix be obliterated or not, in from five to forty-five minutes.

(b) It admits of perfect sterilization, is comparatively easy of introduction, and does not seriously injure the cervix by pressure, nor laceration by distension.

(c) Leopold declares that it is a safe and useful instrument and should be in the hands of every practitioner, and that in the future eclampsia will rarely furnish an indication for Cesarean section.

(d) Dickinson, New York, proclaims the Bossi dilator "a great boon, and none of its imitators approach it."

(e) This dilator may be employed in any condition demanding *accouchement forcé*, except in malignant disease of the cervix.

This is, collectively, the estimation in which this instrument is held by the above authors. The number of cases reported demonstrating the range of its utility exceeds two hundred. Eclampsia and placenta previa are the most frequent causes for the relief of which this method of dilatation has been, and still is, highly recommended and practiced. If all that has been claimed for this instrument by Bossi and his followers were true, what a blessing it would be! But, oh! what a disappointment it has proved itself in the hands of many of the best obstetric operators!

The impression produced upon the profession by Leopold's recommendation of the Bossi dilator was certainly effective and productive. Opposition to it soon arose, which is only natural, but in this case it was anxiously expected by many. Hartz fittingly remarks: "The cases treated by Bossi dilatation grow like mushrooms from the soil." Look at the Bossi dilator, separate its branches, and, while the ingenuity of its mechanism challenges your admiration, a feeling of apprehension and resentment against its employment will arise within many and grow with every moment of contemplating its possibilities and impossibilities. Bossi gives the subjoined indications for his dilator:

I. The cervix may be immediately dilated, whatever the condition of softening, shortening, or dilatation, to a sufficient extent to extract a fully developed fetus.

II. This dilator should be preferred to Cesarean section, ante- as well as postmortem.

III. It is indicated in the induction of premature labor.

IV. In grave cases of eclampsia.

V. In cases of heart disease, tuberculosis, dead and putrid fetus. Fieux adds: pneumonia, pleurisy and ascites.

VI. When the life of the fetus depends upon rapid extraction.

VII. In placenta previa; anatomical, cervical stenosis with undue prolongation of labor.

VIII. In cicatricial stenosis the instrument should be tried before cervical incisions are made.

IX. In cases of incarcerated placenta, the result of uterine tetany.

Bossi supports the above with excellent results obtained by himself in over one hundred cases. An additional hundred cases have been furnished by himself and several other able and distinguished men since he made his first report (1891).

In a most exhaustive paper on this subject by Hartz², we find that Strumpel, Blau, Rubeska, Heyn and Jautze, v. Bardeleben, Wagner, and Rissman all speak of having had more or less extensive lacerations with Bossi's dilator. De Lee, Chicago, had the same experience in three cases. V. Bardeleben reports two fatal results. Hartz states that cervical tears are often overlooked, because they seldom bleed; that Leopold never looked for lacerations unless there was hemorrhage. Zangemeister, in reply to Bossi's and Leopold's statement that, "with increased practice there is a decrease in frequency of laceration," says: "We have no right to acquire the necessary skill at the expense of the health

and life of patients who place themselves in our care." The danger of septic infection is considerable from pressure wounds, because of inevitable sloughing. Formation of cicatrices will follow, and may become serious obstacles in subsequent labors or produce symptoms which make life a burden, creating the necessity for operations; and it should not be forgotten that, hypothetically at least, cicatrices are considered a frequent cause of cervical cancer. Schatz points out that metal dilatation may be followed by uterine atony. Zangemeister, in spite of slow and careful dilatation with the Bossi dilator, had multiple lacerations in every case. Section had to be made in one of his cases, and it was found that two of the tears extended to the peritoneum; the vagina, too, was badly torn, besides several smaller tears in both cervix and vagina. Hammerschlag reports excessive lacerations in five out of seventeen cases. Osterloh had the same experience, including profuse hemorrhage. Williams, Baltimore, says: "If such serious results as those he himself reported follow the employment of a method in which the amount of dilating force can readily be appreciated by the hand, what must we expect when a powerful metallic instrument, such as Bossi's, is employed, in which the dilating force is applied blindly to a system of compound levers by means of a screw or vise?"

The writer has had but one single experience with the Bossi dilator. The instrument was used with the greatest care, and according to every rule laid down, in the following case: patient aged 38; VII-para; pregnant six months; placenta previa; duration of hemorrhage four weeks, at intervals, and sometimes quite profuse; very anemic and exhausted, but otherwise cheerful. Cervix nearly effaced; os admits tip of index finger, feels soft and suggests dilatability. Bossi's dilator was introduced without the caps, as the opening of the os proved too small with them in position. Slow and gradual dilatation, alternated with relaxation, for about five minutes. Indicator showed 5 cm. dilatation, when a large rent occurred on the right side of the cervix; hemorrhage quite profuse; patient was delivered by perforating the placenta, then version and extraction of the child. The rent was stitched with catgut. Hematoma and sepsis developed, which prevented union of the laceration. Patient made a very slow recovery, and is still an invalid.

Baum, Sellheim, Martin and Fraenkel strongly advise against the use of Bossi's and similar dilators. Dührssen cannot detect in Bossi's method anything that is either safe, certain, gentle, or

free from danger. He considers it a misfortune to have every practitioner provided with this instrument, as recommended by Leopold and others. Dührssen expresses the hope that his easily and quickly performed vaginal Cesarean section may completely rout the gruesome metal dilatation, and Hartz does not hesitate to say that the Bossi dilator and its competitors should all be relegated to the lumber room of obstetric instruments. De Lee's three cases all terminated fatally; the first died of apoplexy, the second and third of the effects of Bossi dilatation, in all probability. He told the writer personally that in one of these cases he might have saved both lives by a timely celiohysterotomy. Bacon, Chicago, believes the Bossi dilator a dangerous instrument, and that it should not be recommended. V. Bardeleben states that there are cervices which will not yield to any manner of dilatation. The most inexperienced may introduce Bossi's dilator and overcome any obstacle during dilatation, but what may happen to the cervix remains a secret. Ohlshausen is of the same opinion.

CONCLUSIONS.

Having thus considered at some length the principal methods of accouchement forcé, I present the following conclusions:

1. *The graduated steel or vulcanite dilators and the ordinary branched or bladed dilators* are mainly employed for the purpose of dilating the cervix or os preparatory to digital, manual and bag dilatation.

2. *The bag or hydrostatic dilators*, of which the Champetier de Ribes balloon and its modifications are the most favored, should be employed only when time is not an important element in the case; when the cervix is thoroughly softened, partly or entirely effaced, and an easy introduction of the balloon possible. This form of hystereuryisis is contraindicated in central placenta previa and in eclampsia, mild or severe; if, in these conditions, it is determined to empty the uterus, deep cervical incisions, vaginal or abdominal hysterotomy promise the best results for mother and child. To prevent continuation of the cervical incision, a suture may be placed in the upper angle of the wound.

3. *The manual dilatation of Harris and the bimanual (digital) dilatation of Bonnaire and Edgar.*—A soft and partially obliterated cervix and dilatable os are absolute prerequisites for this variety of uterine dilatation. It is to be preferred to hydrostatic hystereuryisis when time constitutes an important element. Un-

der this method the life of the fetus is often lost and, unless great care is observed, sepsis, lacerations, hemorrhage, profound shock, and sometimes even death of the mother, may occur.

4. *Deep cervical incisions and Dührssen's vaginal hysterotomy* are destined to play a permanent and important rôle in the management of forced labors in the future. Many of the cases now subjected to manual or balloon dilatation will be treated by cervical incisions. It is *the* method in the presence of sepsis of the vagina, because the operation is short in duration and can be performed under a continuous flow of an antiseptic solution. An intact cervix, whether hard, elongated or not, is always an indication for cervical incision. Vaginal hysterotomy is indicated principally when the cervix is the site of malignancy or extensive cicatrization. If there be a palpable difference between passage and passenger, the Cesarean section should be the choice of the operation.

5. *The indications for the conservative Cesarean section* have been so well defined by myself here and in previous papers that it is needless to repeat them now. Cervical incisions and Dührssen's operation will, however, take its place in many instances, notably in cases of marked prematurity.

6. *The Bossi and similar metal dilators*, if they are not entirely needless, are certainly very dangerous instruments. From what has been said, it is safe to predict that rapid and complete metal dilatation will never become a popular method; that, sooner or later, it will receive universal condemnation, and thus reach its final and well-deserved destination, "the lumber room of obstetric instruments."

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13 GARFIELD PLACE.

DR. HENRY SCHWARZ, of St. Louis, was glad to hear the experience of the essayist with reference to Dührssen's vaginal Cesarean section, because personally he had had no experience with this new method. He could conceive of exceptional cases, as, for instance, a case of eclampsia, or of placenta previa, in which Cesarean section might be justifiable in proper hands and under proper surroundings. As a rule, in eclamptic convulsions Dührssen's method should be the one of choice, and there could be but very few exceptions where the conservative Cesarean section was indicated. Of the large number of cases of placenta previa that occurred, only a small percentage of them would ever be placed in a hospital. Besides, it was hard to tell whether a case was one of central placenta previa or not, unless there was sufficient dilatation. No one would maintain, he thought, in a case of marginal or low-seated placenta, with hemorrhage, that Cesarean section should be resorted to. Whenever one made a diagnosis of placenta previa centralis, the cervix was so far dilated that no one would think of doing anything except to deliver through the natural way.

As far as Bossi's dilator was concerned, he had used it twice, and, while he knew that two cases were not sufficient on which to base an opinion, yet in those it worked like a charm. These cases were especially selected for the instrument. He would not abandon the use of the instrument altogether, as he thought it should be given further trial, notwithstanding some harsh statements that had been made regarding it.

DR. JAMES F. W. ROSS had done Cesarean section three times, with the recovery of the mother and the loss of the child in each case. The loss of the child was due to the unfortunate fact that in one case Cesarean section was done before the child was properly viable. In the two other cases the operation was postponed so long that the child was already dead.

After coming back from Europe and having been with the late Lawson Tait, who was a great advocate of the Porro operation, the speaker performed this operation. The question between Cesarean section and the Porro operation had been fairly well settled, and the conclusion reached that we should do the Porro operation when Cesarean section failed, namely, when we were unable in any other way to control hemorrhage.

Referring to the performance of the operation in cases of eclampsia, the matter was different, because it was questionable whether any procedure would save the mother in a case of eclampsia, and those who had had considerable experience in eclamptic cases knew that the convulsions might continue after the uterus was emptied, and he had had patients in whom convulsions had come on twenty-four or thirty-six hours after the delivery of the child, and in non-fatal cases as well, showing that as yet we did not understand the true causation of eclampsia. The eclamptic cases should be left out of consideration, but in the other cases the preference he would give to Cesarean section, and he thought in ten years from now we would perform Cesarean section more frequently than we did to-day, adopting the abdominal route, which was easier and would be better for both mother and child.

He was glad to hear Dr. Zinke's condemnation of the Bossi dilator. It was an instrument which, if it did not dilate, tore; and all knew what tears meant in these organs.

DR. O. H. ELBRECHT narrated three or four cases in which he had resorted to transverse incisions with success.

As to the Bossi dilator, he had used it in a case of eclampsia. He introduced the instrument and delivered in eleven minutes from the time he began, saving both mother and child.

DR. ALBERT GOLDSPOHN, of Chicago, spoke a word in favor of symphyseotomy in some cases, saying he was once called, about three o'clock in the morning, to deliver a woman who had been grossly neglected. He was satisfied he could not have saved her life by Cesarean section, but by symphyseotomy he did so.

DR. J. HENRY CARSTENS said some practitioners were too anxious to dilate the cervix. He had seen them use rubber dilators, Barnes' dilators, and other dilators, and then finally send for him or some one else, when there was the greatest difficulty to get the uterus open. He found that when he saw some of these women they were not in labor at all. Simply because a woman had a little pain or a severe pain when there was a fetus in the uterus, some practitioners were certain that the woman was in labor, and they thought it was their duty to hasten it and finish it up as rapidly as possible. They thought they must do something to earn their money. He used to see what he called neurotic women, and along the Mississippi River, along the Wabash, and along the swamps of Michigan malarial toxemia manifested itself in some of these women. It assumed the form of a neuralgia and came on at certain intervals, either attacking the patient in the head, the sciatic nerve, the intercostal nerves, or the pain might be referred to the uterus, and if one inquired into these cases carefully, he would find that the women had pains two or three days before. They would say that at night, at a certain hour, they would have pain. Later the pain might start at seven o'clock in the evening; the next day it might begin at eight or nine, gradually getting worse, and finally the pain might come on at eleven o'clock at night, and the general practitioner concluded that the woman

was in labor. The general practitioner mistook these pains for labor pains in many cases. He did not wish to convey the impression, however, that all of these cases should be let alone.

As far as placenta previa is concerned, one could dilate with the finger sufficiently, and if he could introduce two fingers and turn, he thought it was the best way to treat a case of placenta previa. One did not need to resort to Cesarean section in most of these cases. There might be an exceptional case where Cesarean section was indicated in placenta previa, but such cases were rare.

DR. EUGENE J. BROWN, of Stanford, Ky. (by invitation), remarked, in regard to the statement of Dr. Ross, that in this day of aseptic surgery, with the results of mechanical and manual dilatation, it seemed to him that Cesarean section would become more popular in well-selected cases, and he had no doubt that the lives of more mothers and children would be saved than by other methods.

DR. M. W. MYER, of Columbia, Mo., stated that while there were a great many men who used the Bossi dilator and who recommended its use in placenta previa, there were those who were not so radical in the matter and regarded the Bossi dilator as an instrument not to be used in such cases. In fact, we had to go back to the old methods of delivery in cases of placenta previa, and that was the use of tampons. We could accomplish more with them than we could in any other way. The point made by the essayist that we simply disregarded the life of the child in these conditions was not true. He would admit that if in every case of placenta previa Dr. Zinke would do abdominal Cesarean section, he would have more living children—at least, for a short time, for those who had to do with early premature children knew that the percentage of those they were able to keep alive was small. Occasionally there might be a case where an abdominal Cesarean section was indicated on the part of the mother even in placenta previa. He did not think any man would dare be so radical as to deny this, but to lay it down as a rule in cases of placenta previa he did not think was permissible.

DR. ZINKE, in closing the discussion, stated that whatever he may have said or written in the past on this subject and presented to-day came from a motive to do good in the future, and to get rid of a certain method of obstetric practice which had been the means of rendering families unhappy, because he honestly believed there was great room for improvement in spite of all that had been said against it.

Some of the speakers mistook the situation entirely when they placed him in the position of saying that he recommended Cesarean section for every case of placenta previa. He never dreamed of it. He stated that it would be rarely necessary. The majority of cases of placenta previa were of the lateral and marginal variety, and they did not need Cesarean section.

SOME CLINICAL REASONS FOR ADVISING EARLY OPERATIONS FOR FIBROID TUMORS OF THE UTERUS.¹

BY

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WHEN a patient suffering from fibroid tumor of the uterus consults her physician, he is confronted by the very important question as to the best advice he shall give her. There are three courses to be pursued, namely, medical treatment, an early operation, or a later operation. These questions must be decided by the physician in charge, and the advice that is for the best interest of the patient is a debatable question at the present writing.

It has been the custom of the profession for years to advise women suffering from fibroid tumors to delay operative intervention just as long as they can be made comfortable, or their condition made tolerable by the administration of drugs, with rest in bed or confinement to their rooms during their menstrual periods. That this advice was wise and judicious ten or fifteen years ago, when the mortality following the operation for removal of fibroids was 25 to 35 per cent., everyone must grant. But we have also learned that in delay certain complications will develop in a large percentage of cases, and where these complications arise the mortality following the operation must always be very high. The present low mortality—not more than 2 or 3 per cent.—following operation in uncomplicated cases, should encourage the physician to advise early operation before complications arise in the pelvis or abdomen, which cause a high mortality when the operation becomes imperative.

The questions naturally arise, after we dispose of the medical treatment, which will not be discussed in this paper:

- (a) Which cases should we advise not to be operated?
- (b) In which cases should we advise late operations?
- (c) In which cases should we advise early operations?

It will be necessary to discuss at some length the clinical history of these patients, in order to form a correct conclusion.

(a) If a patient between 35 and 38 years of age, suffering from a fibroid tumor of the uterus, the tumor and uterus combined

¹Read at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists at St. Louis, Mo., Sept. 13-16, 1904.

making a mass not larger than a cocoanut, has no symptoms other than profuse menorrhagia, the whole period not extending over five or six days, and she is free from pain except at her menstrual periods, it would be wise and judicious not to interfere surgically. But this patient, during her entire menstrual life, should be considered an invalid by her physician, and should report to him at once if her symptoms become aggravated.

(b) If she suffers pain in one or both iliac regions at other times than at her menstrual periods, the cause of the pain should be discovered at once and corrected. On the contrary, if her menstrual period is prolonged to ten or twelve days, the loss of blood amounting almost to a hemorrhage, and this hemorrhage cannot be controlled or mitigated by the usual internal medication and rest during the period, the advisability of an operation should be considered.

(c) Prolonged and severe uterine hemorrhage has not been considered a sufficient reason for advising an operation. A patient suffering from a tumor as large or larger than a cocoanut, who has profuse bleeding at each menstrual period and the period is prolonged for eight, ten or fifteen days, as it frequently is, is in considerable danger. It has been my experience that a large majority of these patients in which the hemorrhage cannot be controlled by medicinal remedies in a few weeks, come to operation sooner or later. They can frequently stand off the operation two or three years, or in some instances longer, but the anemia is profound, and if some complication arises in the tumor, ovaries or tubes, making an immediate operation necessary, they are in the worst possible condition for it. The chances for a successful operation are greatly diminished. Therefore, when the hemorrhage cannot be controlled within a few months, these patients should be advised to have the operation made before the anemia becomes pronounced. These symptoms, however, are not of so much importance as others that I shall refer to, but, if permitted to continue for many months, they cause profound anemia, lowered vitality, and a high mortality following operation.

There is one condition, however, that has not been much discussed in medical journals or in textbooks. It is not infrequently met with, and has not, in my judgment, been sufficiently emphasized as a dangerous complication caused by delay in advising operations in many of these cases. I refer to hematoma of the ovary. This condition is seen in those women in whom the tumor has existed for many years. One or both ovaries, usually but

one, become imprisoned below the tumor in the pelvis and a hematoma develops. Why a hematoma is more prone to develop in an imprisoned ovary is a question that I am unable to answer, but in my experience this is a condition that frequently exists. In every case where a hematoma exists the patient gives a history of suffering more or less pain in the pelvis, abdomen and back constantly between her menstrual periods, as well as during the menses. The patient is also subject to slight attacks of inflammation in her pelvis and abdomen, and is frequently compelled to remain quiet for a few days at irregular intervals.

In examining these patients the fibroid tumor is found occupying the pelvis, and it is fixed so that it cannot be pushed or lifted out of the cavity. Below the tumor, and on one side of it, can be felt a distinct mass somewhat softer than the fibroid itself. This mass will vary in size from that of an orange to twice that size, or even larger. If the case is one that has deferred operation as long as she could tolerate her existence, the clinical thermometer will show a rise of temperature of from one to three degrees. When the patient comes to operation the tumor will be found fixed in the pelvis by adhesions, and below it will be found the imprisoned ovary, containing from half an ounce to an ounce or more of thick, dark blood resembling tar in color and consistency. It has been impossible, in my experience, to separate the tumor and the ovary in these cases without rupturing the hematoma and getting this fluid on the fingers and over the field of operation, because in liberating the tumor the wall of the sac is so friable that it readily breaks down. The sac is, of course, adherent to the pelvic floor and to the tumor.

I regard hematoma, when co-existing with fibroid tumors, as the gravest complication that we have to deal with in the management of the late cases. In spite of the greatest care possible to prevent infection, this fluid being very virulent, almost all such cases develop septic peritonitis after the operation, and not a few of the patients die from it within two or three days. I regard this condition, following operation for fibroid tumors, as very much more dangerous than those cases complicated by a suppurating tube. In the large majority of patients suffering from suppurating tubes the infection takes place after the tumor has attained a large size and the suppurating tube is above the tumor, so that it can be reached by the operator and removed without rupture, thus avoiding contamination of the field of operation.

My records show that only one patient in seven operated upon

for fibroid tumors, where pus tubes were present, developed peritonitis after operation; while five in every six of those operated upon in which hematoma of the ovary existed suffered from peritonitis following the operation for removal of the tumor. While every patient who develops peritonitis after these operations does not die, it is a very dangerous complication, one that must always be dreaded by the operator, and one that often terminates fatally. After a hematoma has become infected, the patient is compelled to be operated upon for relief. The fibroid tumor itself may not be larger than a cocoanut, yet the patient suffers from repeated attacks of pelvic inflammation, with pain in the pelvis and abdomen in the intervals as well as during the attacks. On account of the small size of the tumor many of these patients have been advised not to be operated upon, their physician hoping to carry them over the menopause, with the belief that the symptoms would all become quiescent at that time and the patient would be saved the dangers of an operation. If these patients suffering from hematoma of the ovary had been subjected to operation when the ovary was first imprisoned in the pelvic cavity—when they commenced to complain of pain between their menstrual periods—instead of delaying it for two or three years, they could have been saved the extra risk of peritonitis following the operation.

It may not be possible clinically to differentiate between hematoma of the ovary and a suppurating tube from the physical conditions at the examination, but if we can exclude gonorrheal infection we can, as a rule, exclude a suppurating tube. If this can be excluded, and the patient is having recurrent attacks of pelvic inflammation and has a mass beneath her fibroid, we should always suspect a hematoma of the ovary, with infection of its contents. The infection of the hematoma is probably through the walls of the rectum, and caused by the colon bacillus. The writer can recall a number of cases in which the hematoma was below the tumor and adherent to the rectum. At the time of operation the odor from the contents of the hematoma was not unlike that from an ischiorectal abscess. It is in these cases that the greatest danger from infection exists.

The well-recognized fact that small fibroid tumors of the uterus frequently become quiescent after the menopause, that many of them diminish in size, and the fact that a high mortality formerly attended the removal of these tumors, had a powerful influence in moulding the professional opinion toward advising delay and counseling against operation.

The large majority of general practitioners to-day are inclined to advise their parents to delay operation for fibroid tumors as long as they can. The professional opinion has not changed materially in this respect in the past fifteen or twenty years. The present low mortality following operation, if made before complications arise, does not justify this opinion.

Another danger that is not sufficiently emphasized is that of secondary changes in the tumor itself. Malignant disease usually occurs after the menopause, but just how long after I am unable to say. While the usual period is three or four years after cessation of menstruation, I can recall a number of cases in which malignant disease supervened in these tumors during the menstrual life, and a small number in which it developed many years after the menopause. I have notes of one woman suffering from a fibroid tumor about the size of a cocoanut, who ceased to menstruate at 47 and all symptoms attributed to the tumor disappeared. I removed the tumor when she was 66 years old, after it had been causing trouble for six months, and it had malignant disease well advanced in it.

Another patient, who ceased to menstruate at 45 and had no serious trouble until five or six months before her operation, had malignant degeneration in her fibroid and was operated upon by me at 56. Still another patient, the wife of a physician, ceased to menstruate at 49. She had been the subject of a fibroid tumor since the age of 39 years. After her menopause the tumor remained about the size of a large cocoanut, which bothered her very little until she was 69 years of age, when it became troublesome and increased in size. It was removed within five or six months afterward, when it was found that malignant degeneration had taken place.

The usual history of malignant degeneration is, that within two or three years after menstruation has ceased the tumor, having been quiescent all this time, suddenly commences to increase in size and causes disturbance from pressure symptoms and pain. Within a few months from the time she commences to complain, the patient suffers so much that she demands relief. At the time of the operation malignant disease is manifest.

My experience in removing these malignant fibroid tumors has been that, within a year or two after the operation for removal of the tumor, the patient has a recurrence of malignant disease in the pelvis and abdomen and succumbs within a few months. The fact of a recurrence is not difficult to explain, because in most of

these cases it is plainly evident at the time of the operation that all of the malignant disease cannot be removed. The results regarding the recurrence after this operation are such a contrast to that of removal of the uterus for cancer of the cervix that it makes a very gloomy picture. If the profession at large thoroughly realized that no patient who is the subject of a fibroid tumor of the uterus is thoroughly safe when menstruation ceases, even if the tumor does become quiescent, it would be a great advance in the right direction. It would have a good influence in moulding the medical opinion and in protecting these patients from malignant disease, and would add many years to the sum total of their existence. I believe the advice given these patients so often—that they will be all right when the menopause is established—is dangerous. The correct advice to give them is that no woman suffering from a fibroid tumor of the uterus is thoroughly safe at any time in her life as long as she carries the tumor. If this were adopted by the profession, it would be a great boon in safeguarding their interests. We must first realize our dangers, in order to know how to guard against them.

There are other clinical reasons, such as inconvenience from large size, pressure symptoms, bladder irritability, the liability of pregnancy, which should it occur may greatly complicate the case; intestinal obstruction and, in many cases, long years of invalidism. These conditions need only be mentioned here. The two principal reasons which induced me to write this short paper are first, the great danger in hematoma of the ovary; and second, the possibility of malignant degeneration of the tumor. Even where the fibroid tumor is not larger than a cocoanut, if the tumor becomes fixed in the pelvis the danger of hematoma of the ovary is very great, and it is usually the particular complication that compels these patients to seek an operation for relief. As stated before, the dangers following an operation of this character are very great, and these dangers should be avoided by advising patients to submit to an operation early, before the formation of a hematoma.

Just as soon as the patient commences to suffer acute pain at other times than her menstrual periods, an operation should not only be advised, but urged, for there is usually something wrong in the tumor itself, or in the viscera adjacent to the tumor, that will in the end necessitate an operation under unfavorable conditions or circumstances. It is not just to the patient to postpone an operation until a hematoma has developed and the dangers

from an operation have been increased to a mortality of 25 to 35 per cent., as against 2 or 3 per cent. if they were operated before that occurred.

While secondary changes are not so frequent as the former complication, they should always be kept in mind. After a woman has passed the menopause still carrying her tumor, if any symptoms of inconvenience arise she should be advised and urged to have an operation at once. By this means we may be able to remove the uterus early enough to prevent recurrence. Just as long as the profession advises these patients to carry their tumors as long as their condition can be made tolerable, we will witness patients coming for operations after cancer is so far advanced that an operation for removal of the tumor can only serve as a temporary respite.

628 ELM STREET.

SHALL WE REMOVE ALL FIBROMATA OF THE UTERUS ON DIAGNOSIS.¹

BY

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IN the minds of many of those present there may be no question as to the advisability of the removal, upon diagnosis, of the uterine fibromyomas. However, notwithstanding the fact that the general trend of medical journal literature is in the direction of advising removal in all such growths with rare exceptions, a perusal of standard American authors discloses the fact that a majority of them, after outlining with considerable detail the various non-radical methods, hold that the mere existence of such a tumor should not be considered as a necessary indication for its removal. So far as medical treatment and those surgical procedures which have in view the avoidance of hysterectomy are concerned, they may be dismissed as of such small value as to merit little consideration. The writer's observation and experience lead him to the belief that they only serve to palliate while the day for successful surgical treatment passes by.

¹Read at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists at St. Louis, Mo., Sept. 13-16, 1904.

Electrical treatment, after numerous trials, he has abandoned. Ligation of the uterine arteries, while still practised by a limited few, has not given results definite and permanent enough to warrant its continuance. Atrophy may occasionally occur during pregnancy. They may cease to give trouble after the menopause, if the patient is so fortunate as to weather the storm incident to this change. The treatment of procrastination, awaiting the menopause, is to be condemned.

To quote J. Bland Sutton¹, surely there is nothing in the whole range of surgery more ironical than a woman spending twenty, or even thirty, years of her life as a chronic invalid on account of a uterine fibroid, in the expectation that at the menopause she will be restored to health and begin a new life, and then to realize that, far from this thing being fulfilled, the fibroid becomes necrotic, extruded, or septic, and places her life in the gravest peril, and that she may die in spite of surgical intervention.

Much has recently been written concerning sarcomatous degeneration of fibroids, and the general consensus of opinion is that at least 5 per cent. of fibroid tumors undergo sarcomatous degeneration, to say nothing of those fibroids which become secondarily involved, other parts of the uterus being infected with carcinoma. Indeed, sarcomatous degeneration of these tumors seems to occur in cases where the fibroid has lain dormant for some time, and Herman² reports a case in which a bleeding fibroid had dwindled and ceased to bleed for years after oöphorectomy and then began to grow rapidly, but no mention is made of any microscopical or post-mortem examination.³

In this connection, Findley⁴ says: "When a fibromyoma of the uterus undergoes malignant changes it takes on rapid growth, becomes softer in consistency, and metastatic growths may arise in the lungs and elsewhere." When a fibroid takes on rapid growth, and particularly if near the time of the menopause, no time should be lost in removing the growth. Then, it having been shown by such men as Cullen, Pick and Gerhard that carcinomatous degeneration does take place in these growths, and by some the percentage being estimated as high as 5 per cent., what is the justification in awaiting the development of malignancy before surgical intervention is had?

That necrotic and infectious changes arise in these growths, and that once having arisen they diminish the chances of recovery, is readily admitted. In one case under my observation a fatal infection resulted from the use of an unclean electrode used for the

purpose of removing a large submucous fibroid. In another case gangrene set in, with fatal results, following ligation of the uterine artery. In another case I removed a pedunculated submucous fibroid which had given absolutely no symptoms until gangrene set in, and to good fortune must be credited a successful result in this case. Moreover, John S. Fairbairn⁶ finds the tumors most frequently affected by this fleshy necrobiotic change are the interstitial fibroids of medium size. In spite of their blood-stained appearance, they are not engorged with blood, and hemorrhage and vascular congestion are not the marked features in these tumors.

As long ago as 1884, Hoffmeyer⁶ called attention to the frequency of cardiac disease in cases of abdominal tumor, and especially with fibromata of large size. He collected a series of eighteen cases in which sudden death was caused by cardiac failure, provoked by the presence of large abdominal tumors. Fehling⁷, in a series of fourteen hysterectomies, studied all the patients from this point of view, and found in four of them manifest signs of cardiac alteration. Kessler⁸ records the removal by laparotomy from a woman, fifty-four years of age, of a fibromyoma of the uterus weighing about sixty pounds. Convalescence progressed well until the seventh day, when the patient died suddenly while sitting up in bed. The autopsy showed fibroid changes in the myocardium of the auricle and left ventricle. Kessler is inclined to attribute this cardiac lesion to circulatory obstruction by the tumor.

In an article entitled, "Complications and Degenerations of Fibroid Tumors of the Uterus,"⁹ Charles P. Noble gives some interesting facts. Out of a series of 218 cases operated upon for fibromyoma of the uterus complications were encountered in 126, and these complicated cases he divided into three groups: first, those which would lead to a fatal result, of which there were 71; 32 of the fatal degenerations or complications being of the uterus or tumor, and 39 of the appendages. Second, of complications threatening the life of the patient, of which there were 25. Third, conditions leading to a more or less permanent invalidism of the patient, of which there were 30. Martin, quoted by Noble, reports 205 cases in which there were complications in 57, most of which would have eventually proven fatal.

In a later paper he reports additional cases, with an increasing proportion of complications. In *American Gynecology*, April, 1903, he concludes a paper as follows: "It was estimated that,

because of the degenerations present, 16 per cent. of the patients would have died without operation and that, because of the complications present, 18 per cent. would have died without operation, or a total of 34 per cent. * In addition to this, a certain number of the patients would have died from intercurrent disease contracted because of the reduced state of health of the patient; in other words, that more than one-third of the women having fibroid tumors which had come under my observation would have died had they not been submitted to operation."

In the 117 cases upon which the writer has operated for fibroid tumor of the uterus, complications which bade fair to result eventually in death were encountered in 43 cases. Hydrosalpinx, either unilateral or bilateral, five times; suppurating dermoid cyst, three times; sarcoma, once; parovarian cyst, once; necrosis of tumor, eight times; cystic degeneration of ovaries, three times; ovarian cyst, four times; intraligamentous development of fibroid, three times; pyosalpinx or salpingitis, seven times; hematosalpinx, once; cystic degeneration of the tumor, once; myxomatous degeneration, three times; adenocarcinoma of body, twice. Among the more prominent complications, appendicitis was encountered once. In addition to the complications inherent in the uterus and its adnexæ proper, we have those arising from the pressure of the mass upon the bladder, rectum, ureters, and the persistent anemia resulting from prolonged hemorrhages.

In the writer's forty-three complicated cases, as well as in those of other writers on this subject, it is a significant fact that those complications which were inherent in the tumor, and which presaged the most certainly fatal results, were those of such character as to preclude a positive knowledge, or oftentimes even a suspicion, of their existence prior to operation, or even a microscopical examination.

This, then, is the arraignment of the uterine fibromyoma and, in the mind of the writer, justifies their removal in all cases, except in so few as to scarcely merit attention. Shall we, then, not remove all fibromata upon diagnosis, not for the harm they are now doing, but against the harm that they may do in the future? As far as the danger is concerned, the removal of a fibroma is attended with as little danger as the average abdominal section, and I am not unmindful that the removal of the uterus from a comparatively young woman is not a thing to be lightly considered.

The results obtained by various operators warrant us in class-

ing it among the safe operations, the mortality being in the hands of skilled men scarcely more than 5 per cent.—a mortality certainly much less than would result from the policy of procrastination which advocates delay until the forces of death, plus those of the operation, outweigh those of surgical intervention. There is nothing so innocent as an innocent fibroid, and nothing so treacherous, and if there is any debatable ground at all, it as to the removal of the so-called symptomless tumor.

But when we consider the dangerous conditions into which this innocent fibroid may quickly change itself, and the ease and safety to the patient with which this innocent fibroid may be removed, the writer believes that the deduction is evident that we should remove all fibroid tumors of the uterus upon diagnosis.

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- 331 NORTH DELAWARE STREET.

The papers of DRs. HALL and EASTMAN were discussed jointly.

DR. WILLIAM J. ASDALE, of Pittsburg, Pa., offered the criticism that neither essayist mentioned a class of cases in which, in his opinion, operation should be mainly interdicted. He referred to those cases in which there was diabetes as a complication. In this class of cases the results were so unfortunate as to almost exclude the idea of operating, whether the tumor be small or large. This had been his experience.

DR. J. HENRY CARSTENS said he would go a little further than Dr. Hall and say that when he had a fibroid tumor of the uterus to deal with it should be removed just as one would remove a diseased appendix. He could not see any reasonable excuse for not removing it. When a woman with a fibroid tumor consulted him, he told her that it must be removed or she would never be well; she would never be out of danger, and she would never be safe until it was taken out. If she did not want it removed to-day, she would want it taken away in, say a month, three months, a year, or five years. In short, some time or other it would have to be removed. The longer operation was delayed the greater the danger attending it, usually, while it was comparatively safe to re-

move these tumors as soon as they were diagnosticated. We took out a tumor of the uterus, not because it endangered the life of the patient, but because the patient was more or less an invalid as long as she carried this tumor. If she was not a physical invalid, she was a psychic one, in that she had this tumor in her mind all the time; she felt uncomfortable about it; she thought and dreamt of it at night. Whether she was in church, at a theater or party, she thought about this tumor, and knew that some day she would have to undergo an operation for its removal. She led a miserable life. To relieve her mental distress as well as physical condition, it was necessary to remove the tumor. There was danger of hemorrhage from the tumor. Fatty degeneration of the heart was a common result of long-continued fibroid tumors.

A short time ago he was called to operate for a fibroid tumor. He went and found a woman, 68 years of age, who had had a fibroid tumor for thirty-five years. She never wanted to have it removed. She had raised a large family of children. He examined her carefully, and said to the family physician that he could not operate, as the case was beyond all help. The tumor had undergone sarcomatous degeneration; he could feel nodules on the liver and around the intestines. There was ascites. He said to the family physician that the woman ought to have been operated on twenty-five years ago, and that he could not operate on her now. After seeing many similar cases, for a long time he had been an advocate of removal of fibroid tumors of the uterus as soon as the diagnosis was made.

DR. H. W. LONGYEAR thought that every fibroid tumor should not be removed as soon as the diagnosis was made, unless there were certain reasons for it, such as those that were given, as pain or hemorrhage. If neither of these symptoms was present and the tumor was small, he had not the slightest hesitation in telling the patient that she need not be in a hurry in having it removed. But sometimes the tumor must be taken out, and in case any of the symptoms arose that Dr. Hall had mentioned, the tumor should be removed. He had a number of women under observation just in that condition; there was not a symptom in either case. They knew they had a tumor, because they had been examined and told so. He had no hesitation in allowing such women to go on until the presence of the tumor gave rise to the development of symptoms; but as soon as either of the symptoms mentioned existed, he would advise the removal of the tumor. He removed a tumor of this kind last spring. He had the woman under observation for seven years. When she first came to him she said: "Doctor, I have two little children. I am their only guardian, and it is very important that I should bring up these children as long as possible. I want you to give me your advice bearing that in mind." The woman did not have any symptoms pointing to the existence of a tumor. Her menstruation was regular and normal in every way. She had no pain. The tumor was still in the pelvis, entirely movable. The meno-

pause apparently began a few months ago, two months before he removed the tumor, and a month before he did the operation she had some hemorrhage, and he then told her she had better have the tumor removed. Both children were then well up and well-grown. He removed the tumor, and the woman was now well. The tumor had begun to soften. He had it examined, and there was no sarcomatous degeneration in it. It was simply a big edematous myoma. He believed this was proper, and was good surgery. It was more humane. He cited another similar case.

DR. D. TOD GILLIAM said he had always had the reputation of being conservative in regard to operations for fibroid tumors of the uterus, but he must admit that his mind had undergone some change in the last few years. He had not, however, changed it to anything like the extent Dr. Eastman advocated in operating on every case of fibroid. He read a paper before the American Medical Association in which he gave instances of operations that were performed and patients lost their lives who were everything to their families, who were in the prime of life and health, and upon whom much depended. Such cases ought to make operators hesitate. There was a mortality attending this operation. This mortality had been put at two or three per cent. in uncomplicated cases, but, taking the cases as they came, operations on them would be attended with a mortality of from five to ten per cent. He included in this mortality rate the complicated as well as simple cases. It was not only the life of the individual, but woman was here on earth for a purpose. She was here to carry out the scriptural injunction which says, "Be fruitful, multiply and replenish the earth." A great many women bore children who had fibroid tumors. While these tumors were prohibitive in some cases of women bearing children, he could recall women under his observation who had borne several children, who had had fibroid tumors for some time, and seemingly they got along nicely. Again, one ought to consider what the possibility was in taking these women from their families, who were so dependent upon them.

The speaker cited a case similar to the one narrated by Dr. Longyear, the woman being the only guardian of the children. The children were now grown up, so that they could take care of themselves if it was necessary for the woman to undergo an operation. He told her a short time ago that if she wanted an operation done now he would not hesitate to do it.

As regards statistics, it was easy to be misled by those one gathered for himself, although he did so with the greatest care. According to Dr. Eastman's paper, thirty-five per cent. of the women with fibroid tumors of the uterus would have trouble, sooner or later, which would eventually terminate fatally. To draw conclusions from statistics which were fairly accurate, one ought to go back to the time when these operations for the removal of fibroids were not done, and see what the results were. He had

been watching women with fibroid tumors for a great many years, and he should say that not more than two or three per cent. of the women who had been let alone with fibroid tumors had died as the result of their presence, directly or indirectly. They might have led lives of invalidism and been miserable, but, feeling the way the speaker did now (and he had operated on a great many of them), he should say the real mortality arising from a fibroid tumor directly or indirectly was small.

DR. E. GUSTAV ZINKE said that if he could say to a patient who presented herself with a fibroid tumor he could save her life by removing it, or he would not sacrifice her life by removing it, he would insist upon an immediate operation. But he could not do this. There was a certain risk in all these cases, and many of these women lived a comfortable and useful life with these tumors. He had had under observation probably five cases, within the last two years, of fibroid tumors on which he refused to operate immediately, and simply for the reason that the women were not subject to any inconvenience on account of the tumor. There was no hemorrhage or pain, and as long as these symptoms were absent, just so long would he defer operation.

He was called to see a woman several years ago who had passed the menopause four years. It was known that she had had a tumor for ten years, which was small at the time it was discovered, and because she was near the menopause all the physicians whom she consulted advised the removal of the tumor. She passed through the menopause successfully, and four years after that was apparently well. Suddenly this tumor became troublesome in the form of an offensive discharge from the vagina. He was called to see her, and so far as he could diagnose at the time, it was either a case of malignant degeneration or a sloughing submucous fibroid. An operation was advised and consented to, and he intended to do a vaginal hysterectomy. The tumor was comparatively small, so as to permit the ready removal through the vagina. There was nothing to be felt of the tumor on vaginal examination, except the os was closed. Patient was at the hospital three days preparatory to the operation. When he was ready to operate, and the patient was under chloroform anesthesia, he introduced a speculum and found that the tumor had been expelled from the uterus and was lying in the vagina, adherent to a small pedicle. The tissues looked healthy. He simply split the cervix close to the side and removed the tumor. Patient was well two weeks after the operation. In less than three months, however, there was a recurrence of the trouble, and she died from a general carcinomatosis within three months after the operation.

DR. HERMAN E. HAYD said the subject of fibroid tumors was very interesting, because it was so full of surprises. He did not realize until he had listened to Dr. Hall's paper that hematomas of the ovary were so frequently associated with fibroid tumors, and that they necessarily presented a fatal complication. He could not see why a hematoma of the ovary, when associated with a

fibroid tumor, should be necessarily more dangerous than a hematoma under any other circumstances. If it was such a frequent complication, it would not be possible for so many of the Fellows who had read papers on this subject to present a series of cases, as the speaker did three years ago, of thirteen with one death, and he said he could add fifteen more without a death.

It was a fortunate thing for humanity and for the Association that the Fellows really did not disagree very much in regard to the treatment of fibroid tumors. He took it there was not a man in the Association who put any stock in any other remedy than operation. Years ago he was an enthusiast on electricity in the treatment of fibroid tumors of the uterus. He was one of Apostoli's students. He used electricity a great deal. He had discarded it. He made up his mind that it was more dangerous than operation. And so it was with every other remedy that had been suggested for the treatment of fibroid tumors. He thought the very best advice one could give a patient was that the tumor should be operated upon, when the patient presented symptoms. But whether it should be operated upon as one would operate in a case of appendicitis, as soon as the diagnosis was made, he would say no in some cases. It would be absurd, in his opinion, to say that every case should be operated upon at once. The patient should be told that an operation was necessary, and that she should conveniently arrange her affairs to have an operation done, or watch her condition with that object in view.

Simple fibroid tumors of the uterus without complications of tubes and ovaries were not common, in his experience. Usually, there was a large hydrosalpinx or ovarian tumor complicating the case, or pus tubes, or there was a dermoid cyst. Of course, there were exceptions, but usually they were complicated with tubal and ovarian disease, and that was the objection to the electrical treatment.

He thought there was a good deal that could be said in regard to operation in connection with diabetes. Noble had worked this phase of the subject out, and had shown that a mere trace or the mere presence of sugar in the urine should not seriously militate against an operation. Women were operated on who had diabetic urine, not a functional diabetes, but a true organic diabetes, and many of them passed through operations just as satisfactorily as if they did not have diabetes. Therefore, he thought every sensible man would weigh his case, and if the dangers associated with the presence of a fibroid tumor were greater than those associated with the diabetes he would remove the fibroid tumor as though the woman never had any diabetes.

DR. THOMAS B. NOBLE, of Indianapolis, said that Dr. Eastman had given a rule which he felt should be the one to follow. These patients appealed primarily to the family physician, the man who had not had very much experience along this line, but the one who was so in the habit of advising patients that he would not, as a rule, refrain from giving advice in regard to fibroid

tumors. The general practitioner was a man who conserved domesticity, and if he knew there was a loophole through which a woman could escape operation he was very prone to put the matter off and delay operation until the patient was in an extreme condition. Then he would call a surgeon, who would be asked to operate to save life. So we had an increased mortality, and we were not able under the conditions to do for an individual what could have been done. The advice of the Fellows should be to the men who do not know as much about these matters as they did that a tumor ought to be removed as soon as it was discovered. Theoretically, these tumors fell under the class of all neoplasms, which grew at the expense of the organism locally or generally. They were without function. They served no purpose. They were fruitful of great harm. They killed. They were malignant, in a clinical sense, sometimes. Instead of the advice given by Dr. Zinke, he believed it was best to operate, unless there were strong indications not to do so.

DR. JOHN YOUNG BROWN said it was a well-recognized fact that in the surgery of the stomach, gallbladder, the appendix and pelvis, the cases that gave the highest rate of mortality were those that came late to the operating table. Another reason for early operations in fibroid tumors of the uterus was the perfection of the technique of abdominal hysterectomy. He knew of no operation in surgery more beautiful in its conception and execution, and more pleasing in its results, than the perfected abdominal hysterectomy. We were largely indebted for this perfection in technique to the work of the distinguished father of the essayist, Dr. Joseph Eastman.

The mortality following operations of this kind, even at 8 per cent., was small, and that was a large mortality for uncomplicated cases. If we weighed on the one side the mortality of 8 per cent. and on the other the morbidity of perhaps 60 or 70 per cent., it was an exceedingly strong argument in favor of the early operative treatment of these tumors.

DR. FRANK A. GLASGOW, of St. Louis (by invitation), said that conservative treatment of fibroid tumors of the uterus was not popular; and by conservative treatment he did not mean the doing-nothing method. He thought there was a half-way measure in dealing with these tumors. He had had many patients with fibroid tumors which caused them absolutely no disturbance. These tumors were of the submucous variety. In only a comparatively few cases of fibroid tumors of the uterus was it necessary to operate as soon as the diagnosis was made. There was a certain hygiene of fibroid tumors, as well as for other diseases of the body, and we could help these patients without operating on all of them.

DR. O. H. ELBRECHT, of St. Louis, recalled eleven cases of women with fibroid tumors who were supporting large families, some of them washerwomen, who could not work on account of the distress and discomfort which these tumors gave them. It should be remembered that the opportunity that these women had

of earning a livelihood was impaired by the presence of these tumors. He thought they should be removed, and it was nothing more than our plain duty to operate in such cases. Simple, uncomplicated fibroid tumors should be operated upon. He had operated on these cases, and had not had a death from fibroid tumor this year.

DR. JAMES E. SADLIER, of Poughkeepsie, N. Y., stated that he had a sad recollection of a case in which he considered it unnecessary to do anything. A woman with a small fibroid presented herself to him some five or six years ago. She was neurotic. By reason of the small size of the tumor he advised no operation. She was to have presented herself to him at specified times for examination, so that he might judge her case and advise her, but this she failed to do and she had put off counsel as long as she could. Five years thereafter she presented herself to him, for the second time. When she presented herself the second time the tumors reached above the umbilicus. He advised immediate operation. The patient left him and went to New York City, was operated on, was exsanguinated from loss of blood and died.

For the last several years it was his practice to operate when the diagnosis was made. He could not see why the mortality should be put at 5, 8, or 10 per cent. from operations on these cases. Personally, he had not had it. With a record going back more than three years, he had operated on twenty or more cases of fibroid tumors without a death.

DR. HALL, in closing the discussion on his part, said it was very essential that it should go out from the Association that we did not operate on every woman who had a fibroid tumor just as soon as the diagnosis was made. Personally, he would not operate on every woman who had a fibroid tumor the minute he discovered it. Small fibroid tumors that were doing no harm, producing no symptoms, had better be let alone for the present. He thought it was wrong to advocate and practice the removal of fibroid tumors the minute they were discovered. It was not what he would advise his daughter, his wife, or some other man's daughter or wife, to submit to. The woman might lose her life following operation. When surgery was practised along that line, it would be practised along honest lines.

In reference to hematoma of the ovary, he was a little surprised at the remarks of Dr. Hayd, who had said that he could not understand why a hematoma of the ovary, when associated with a fibroid tumor, should be necessarily more dangerous than a hematoma under any other circumstances. Dr. Hall said that it might be his misfortune to get delayed cases. He had had a large number of desperate cases, out of all proportion to what other men had said they got in operations for fibroids. In other words, he got complicated cases. If patients were to be relied on, or their word was to be taken for what it was worth, some of his professional friends shirked difficult or complicated cases. He had operated on three cases within a year that were sent out of public

hospitals. One of them was confined in bed eight months in the hospital, hoping to get well enough to be operated. Within three days after she left the charity bed he operated, and the woman was now alive, and supporting her child, as a washerwoman. It was not four months since the operation was done.

DR. EASTMAN, in closing the discussion, stated that, were it not for the fact that he had a case which impressed upon him the importance of not postponing operations for fibroid tumors, he should not have had the temerity to present so radical a paper as he had done. He was firmly convinced that it would be a good thing if the teaching went out from this Association that all fibroid tumors of the uterus should be operated upon as soon as the diagnosis was made. At any rate, let the women go to specialists, and if they suggested postponement of operation let them be the judges, and not the general practitioner, who was not capable of dealing with these cases. Fifteen months ago he was a conservatist, until a case cited came under his observation. An unmarried woman, 35 years of age, consulted him with reference to a fibroid tumor that was absolutely symptomless. She herself discovered it. To all appearances, it was innocent. He considered the teaching in regard to fibroid tumors, prescribing when and when not to operate. He applied exactly the same test that Dr. Hall would apply. He told the woman to go home and watch the tumor. But she said, "Doctor, I want this tumor out. I am a maiden lady and it looks bad." He did not believe he was justified in taking it out, and so informed the woman. He told her that she might die, but she insisted on having the operation done. He said to her that he was going on his vacation, and instructed her to come back and see him in three or four weeks. When he returned the woman was dead. Autopsy showed that the tumor was necrosed, rotten. This was only one case; but the question arose, Did he do justice to himself or to his profession? Hereafter he proposed to operate on these cases as soon as he found them, if the patients would consent.

REMOVAL BY VAGINAL CYSTOTOMY OF SKELETON OF ECTOPIC FETUS ULCERATING INTO BLADDER.¹

BY

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(With two illustrations.)

THE specimens I herewith present will prove of interest, as showing the aberrations of ectopic pregnancy, which in itself is an aberrant phenomenon. The history of the case is as follows:

Mrs. W., white, aged 31, the mother of two children aged 14 and 11, presumed herself to be normally pregnant, and expected to be confined August 30, 1900. There was a continuous flow from the uterus for the first three months, and she had pain in the bladder and straining on micturition from the beginning of conception; but there was no history of rupture of the ectopic gestation.

On June 20, at six and one-half months, while lying down she felt motion for the last time. It had previously been unusually vigorous, more so than with her two other children. She was confined to her bed for three or four weeks with pain. She had more or less pain for about a year and she was a semi-invalid from weakness, pain and tenderness in the lower abdomen. The enlargement of the abdomen had gradually, but appreciably, diminished. At the end of a year pus first made its appearance in the urine, and the first day after getting up a bone, which was a fetal vertebra, made its exit through the urethra.

During the second year she was able to attend to all household duties, but occasionally would have several days of unusual bladder irritation and pass a bone through the urethra. In the last four months she passed all the long bones. Sometimes one would catch in the urethra, and she would get hold of the free end and gradually pull it out. Commonly, several days of comparative

¹Read at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists at St. Louis, Mo., Sept. 13-16, 1904.

comfort would elapse before another one would set up irritation, and finally escape. In this way she passed eighty-five bones (Fig. I.)

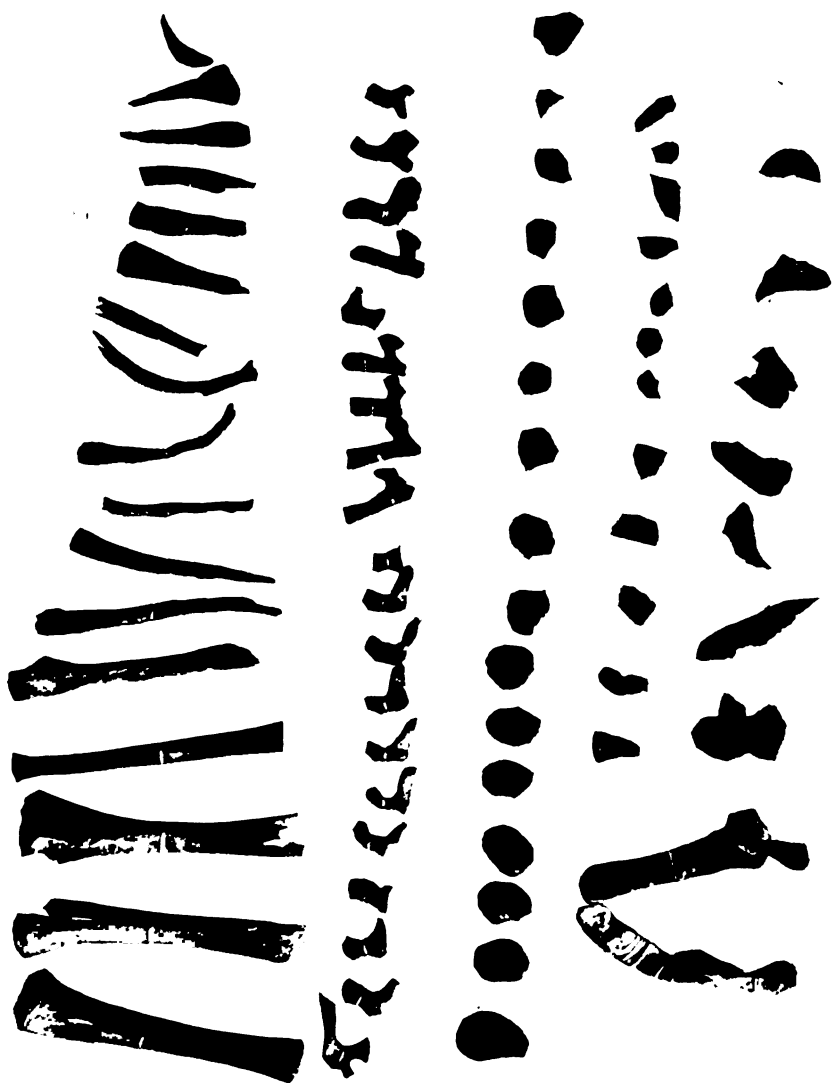


Fig. I. Bones of ectopic fetus passed per urethram.

Six weeks before admission to the infirmary she felt the discomfort of another bone, and has not been free from it since, nor

has any bone passed. She has been in bed two weeks with pain in the lower abdomen, which is very intense on motion.



Fig. 2. Remainder of skeleton removed from bladder.

Upon examination the bladder is exquisitely tender, crepitates upon pressure, the bones being covered with phosphatic deposit.

She describes a small lump to the right of the median line and low down, the remains of the once six and one-half months' enlargement, but this cannot be made out, on account of tenderness. The urine is loaded with pus and phosphates, and exceedingly offensive. Curiously enough, she does not void it oftener than every six or eight hours. Micturition is very painful, and after the urine is voided free pus is often expressed.

Operation.—Under ether, October 31, 1902, the index finger was made to enter the urethra without much effort and detected numerous bones and, communicating with the bladder, an opening into a lesser chamber on its right upper surface was discovered. There was a mass on the right to be made out bimanually, about the size of a small orange, which communicated with the bladder, much as a bow window with partially-drawn curtains does with a room.

The uterus was retroverted, and not much enlarged. The bones were much too large to be removed through the urethra, and an incision was made into the vesicovaginal septum. The finger in the bladder through the urethra located the bone, and it was withdrawn with a forceps introduced through the incision. In this way fifty-two bones were removed. (Fig. II.)

Some were imbedded in granulation tissue in the remains of the ectopic sac and were removed with difficulty. The sac and bladder were frequently irrigated and an artificial vesicovaginal fistula established for drainage, after Emmet's method of sewing the vaginal mucosa to that of the bladder by silver wire sutures.

The operation, while tedious, was not attended with shock. The bladder was irrigated twice daily afterward with boric acid solution, and the urine soon became normal. At the end of six weeks the artificial vesicovaginal fistula was closed successfully by silver wire suture.

A cystoscopic examination with the Bransford Lewis ureter cystoscope revealed a healthy mucosa, and at the site of the former communication only a slight reddish depression was seen. The ureteral catheter failed to disclose any depth to this aperture. The patient was discharged eight weeks from operation, and has remained well since that time.

DR. H. W. LONGYEAR, of Detroit, exhibited a

BILE-FISTULA PAD.

The pad was designed to collect and convey the bile into a receptacle. It consisted of an inflated rubber ring with a thin edge of rubber running around inside of it, the whole being covered over the top with thin rubber sheeting. An opening and tube in its lower side carried the bile into the rubber bag, which could be



Dr. Longyear's Bile-fistula Pad.

placed in a pocket in the clothing. The pad was held in place by an elastic web band, which was attached to the silver rim which ran around the top and outer margin of the pad.

The peculiar feature to this instrument, and the one that made it useful for the purpose intended, was the thin flange inside the inflated ring. This being held closely in contact with the skin, directed the bile immediately to the dependent part of the pad, where the tube was inserted for conveying the fluid into the bag. The inflated ring prevented the edge from cutting into the skin. The instrument could be procured of Hartz and Company, Detroit.

REPORT OF A CASE OF STRANGULATED UMBILICAL HERNIA
IN WHICH CECUM, APPENDIX, ASCENDING AND TRANS-
VERSE COLON WERE FOUND GANGRENOUS IN SAC—
ARTIFICIAL ANUS MADE AT PRIMARY OPERA-
TION FOLLOWED TEN WEEKS LATER BY
DOUBLE RESECTION TO RESTORE IN-
TESTINAL CONTINUITY.¹

BY

JOHN YOUNG BROWN, M.D.,
St. Louis, Mo.

(With three illustrations.)

UNTIL Mayo devised his vertical overlapping operation, the surgery of large, uncomplicated umbilical hernia was far from satisfactory. In view of the high mortality in uncomplicated cases of this character, the following complicated case is of great interest:

Mattie T., the patient I wish to show you, was admitted to the St. Louis City Hospital March 7, 1904. She is 47 years old, married, mother of ten children. Family history good. Fourteen years prior to admission she noticed, after her first confinement, a protrusion at the umbilical ring. With each succeeding pregnancy the hernia grew larger. It gave her little trouble and, with the aid of an abdominal binder, which she wore continually, she suffered comparatively no inconvenience. Eighteen hours before coming to the hospital she was seized with great pain, vomiting, and the usual symptoms of strangulation. A physician was called, who attempted forcible taxis. Failing in this, the usual hot packs were applied. She grew worse, as a natural sequence of this treatment, and when seen by me at 7 P.M. I found the following:

A large, oval umbilical hernia, the size of an adult's head, tightly constricted at its base. The skin over the hernia was blistered from the hot applications used, and the general condition of the patient was bad. She was immediately prepared for operation.

¹Read at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists at St. Louis, Mo., Sept. 13-16, 1904.

Operation.—Transverse elliptical incisions were made, surrounding the umbilicus and hernia; these were deepened to the base of the hernial protrusion, it being my intention to do a radical Mayo operation if conditions permitted. The surfaces of the



Fig. 1.

aponeurotic structure were carefully cleared in all directions from the neck of the sac; the skin covering the sac was dissected back and the sac opened. On opening the sac, five or six ounces of offensive, dark, bloody serum gushed out. The sac was found to contain about two inches of ileum, the appendix, the cecum, ascending and transverse colon, all of which I found black, fetid and gangrenous, the constriction being at the umbilical ring.

Without disturbing the adhesions of bowel to peritoneum at the neck of the sac, I split the umbilical ring external to the sac; this relieved the constriction, and I then ran my scissors through the large and small bowel, leaving an artificial anus at the distal end of the ileum, through which gas and fecal matter in large quantities began to flow immediately. A moist dressing was applied, the patient's stomach was washed and she was returned to bed.

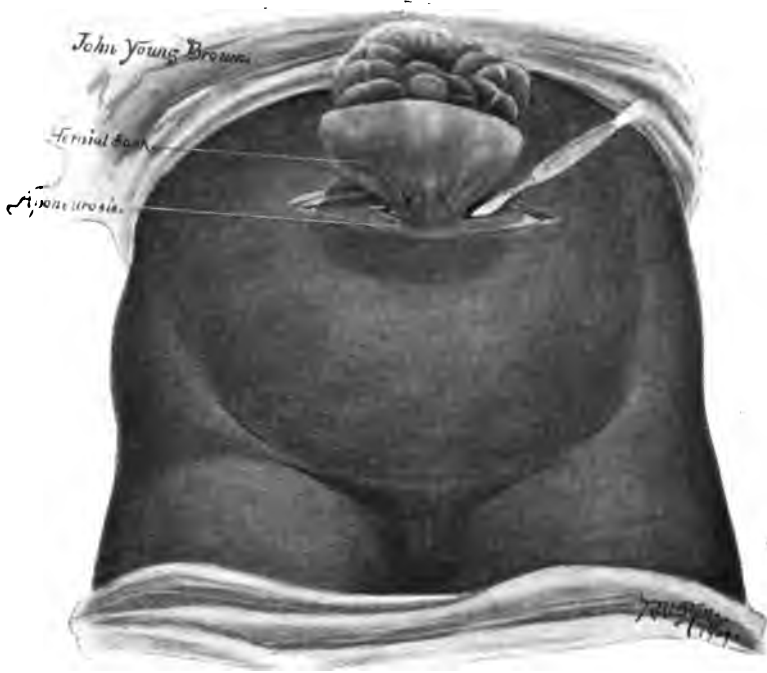


Fig. 2.

Figure I shows the contents of the sac. Figure II shows the method of relieving the constriction by cutting through the umbilical ring. The patient slowly reacted; the gangrenous bowel gradually came away; the wound contracted, leaving fixed in the umbilical ring the distal end of the ileum, through which was discharged fecal matter, and the opening which marked the beginning of the descending colon. This is shown in figure III. From this cut it will be seen that the descending colon, sigmoid and rectum were entirely out of commission; through a rectal tube a through-and-through irrigation of rectum, sigmoid

and colon could be made, the irrigating fluid flowing freely from below upward and out through the opening in the colon at the umbilicus.

Ten weeks after the primary operation I restored the intestinal continuity, as follows: owing to the large stump of mesentery fixed in ring, I did not deem it advisable to attempt a direct anastomosis by liberating adhesions and resecting at the hernial site.



Fig. 3.

I therefore, after carefully cleansing and sealing the two openings of bowel at the umbilical ring with gauze and collodion, opened the abdomen below the umbilicus through a median incision. The ileum was resected close up to its attachment to the ring, the portion of bowel distal to the incision was closed with a purse-string suture, reinforced by a few Lembert stitches; the colon was then resected at its juncture with the sigmoid; the colon was then closed in the same manner as was the ileum. An end-to-end anastomosis was then made between ileum and sigmoid, the anas-

tomosis being done with the Murphy button. The abdomen was closed in layers. The materials used for closure were catgut for peritoneum, muscle and fascia; retention suture of silkworm for skin, fascia and muscle; horsehair for skin. An examination of figure III will show the condition of the viscera after the completion of the anastomosis. Note the pouch of ileum and descending colon, shown by dotted lines. The patient made an easy convalescence after this operation. The rectum, which had been out of commission for so long, took up its work in twelve hours. The button was passed on the nineteenth day.

At the completion of the second operation there were left the two blind pouches of bowel to be looked after. Cut No. III shows the pouches of ileum and colon, the dotted line marking the gut. I assumed that nature would evert these pouches, and that they could be removed later. I, therefore, sent the patient home for a month, at the end of which time she returned. As expected, the bowel on both sides had turned "inside out." The bottom of either pouch was seized with a forceps and the gut clamped and removed. The result was excellent, and there is now left only a small amount of mucosa, which can readily be removed with cautery or carbolic acid.

This case brings up a number of interesting points in regard to the surgical treatment of hernia. First in importance is the question of the management of bowel of doubtful integrity found in a hernial sac. I am convinced that in all cases where it is possible, primary resection should be done. Recently I have operated on five cases of strangulated hernia, three inguinal and two femoral. In all of these primary resection was done for gangrenous bowel through a supplementary abdominal incision, followed by a radical operation at the hernial site. Of the five cases four recovered and one died. The anastomosis was made end to end in each case, and with the button.

The supplementary incision affords many advantages over the old method of resecting at the hernial site and, while I am well aware that serious theoretical objections can be offered to it, the results I have obtained speak eloquently in its favor. I shall shortly present this work in full.

Regarding the radical operation for umbilical hernia, until I adopted the Mayo method my mortality was high, my patients not dying from sepsis, but from post-operative respiratory complications. Within the last year I have done the vertical overlapping operation nine times with perfect results and no mortality.

DR. WILLIAM WARREN POTTER, of Buffalo, said that the essayist had presented a subject of considerable interest to him, because, some years ago, he happened to have some experience with strangulated umbilical hernia. Dr. Brown had accentuated a striking feature of the subject, namely, the great mortality attending strangulated umbilical hernia.

A French surgeon, M. Demarquay, some years ago made a study of this subject, not only as related to his own cases, but to those of other operators as well, and the result indicated a mortality of 50 per cent. for all operators. The mortality tables showed a reduction in recent years, due probably in part to the introduction of new methods, and in other part to the care in the preparation for such operations. The majority of umbilical hernias occurred in women, the ratio being more than four to one. Why it was he knew not, but such had been the observation of statisticians.

His first experience with strangulated umbilical hernia was in 1877, when he was summoned twenty-five miles into the country to see such a case. Arriving about half-past ten in the evening, he found a woman, 39 years old, in agonizing distress, having an old umbilical hernia, that became incarcerated about seven o'clock on the morning of the same day. The physician in attendance had tried taxis, administered morphine hypodermically and, indeed, employed the usual methods, without success. The hernial tumor was a turnip-shaped protrusion through the abdomen at the umbilicus, embedded in a thick environment of fat. Palliative measures were continued during the night, and at daylight he operated. In opening the abdomen and releasing the constriction, it was found that a portion of the liver had thrust itself through the opening, together with the omentum and bowel. The section of incarcerated liver was so tightly constricted the impression, after it was released, was left that it had been tightly drawn with a stout string.

After the operation the symptoms subsided, and the woman made a prompt recovery. She vomited large quantities of bile before and after the operation, which he attributed to the constriction of the portion of liver found in the sac.

The protrusion of these hernias was not usually through the umbilical ring, but above or below the navel. Pregnancy sometimes weakened the abdominal wall sufficiently to predispose to this form of hernia, and obesity was an etiological factor to be reckoned with. Modern operative methods and asepsis, as already remarked, had modified the mortality ratio, but not as much as they had in almost all other abdominal operations.

DR. D. TOD GILLIAM congratulated Dr. Brown on his technique, and on the result of the operation. There were not many ideal methods for such a case as this, but had he done the operation according to methods that were considered ideal, he would doubtless have lost his patient.

He had had no experience with strangulated umbilical hernia, but had had with the radical operation for umbilical hernia. His

results had been different from the statistics quoted, in that he had not had a single death following an operation for umbilical hernia. His secondary results had not been good, because he had recurrences. He had a patient in the hospital at present in whom there were multiple projections of bowel and viscera.

He referred to anastomosis between the small bowel and large one, saying that Dr. Brown had expressed a preference for end-to-end anastomosis. This was the method he had usually pursued in these cases, but he found that his patients complained a great deal, and, after thinking about it, came to the conclusion that it was because of the fecal matter passing backward into the ileum, where there was end-to-end anastomosis. He had changed to lateral anastomosis, leaving a cul-de-sac below as a reservoir for the material that came out of the small bowel. There was much less after trouble from lateral anastomosis than when one resorted to end-to-end anastomosis.

DR. J. HENRY CARSTENS had had reasonably good success in operating on these cases, and, as far as he could remember, he had only one death. These patients were nearly always fat, and in our work there was a lack of accurate adjustment.

Dr. Carstens's further remarks were illustrated by diagrams on the blackboard.

DR. ROBERT T. MORRIS, of New York, stated that the reason why umbilical hernia occurred more frequently in women than in men was because they had a diastasis of the rectus muscle, and one would find in most of his patients with enteroptosis, gastropptosis, loose kidney, diastasis of these muscles occurring much more frequently in women than in men. This accounted for the frequency of umbilical hernia.

In regard to the death-rate, there were several factors to be considered, one of which was that the surgeon was working near the large sympathetic ganglia, and the death-rate from operative procedures was largely in proportion to the shock to the large sympathetic ganglia. As an illustration, he said a patient would have more shock and distress from the passage of a small gallstone than she would have from the passage of a nine-pound baby.

He did not quite understand the mortality from umbilical hernia, although he had not looked up the statistics. He might have lost a patient from umbilical hernia, but he did not remember it now. As to the strangulated ones, he had not had gangrene, although he had operated on several such cases during the year.

Dr. Brown had made three or four points that were of extreme importance. First, he got in quickly and got out quickly. He did expeditious work at the right moment. The tendency was to do too much in very much of our surgical work, and particularly was this true of the younger men and of those who worked too much with textbooks rather than with their own mechanical sense and feeling. It was expeditious work, getting in and out of the abdomen, and leaving the patient as nearly alone as possible, that saved her life.

DR. HERMAN E. HAYD could not understand why there should be a great mortality connected with cases of uncomplicated umbilical hernia. He did not believe that the Mayo operation lessened the mortality, because the dangers in these cases were due to the very intimate association with the great sympathetic ganglia; and then, again, these herniæ were usually seen in large, fat women, who did not take chloroform well. They died of pneumonia and other complications, as the result of anesthesia.

Statistics in reference to a point which Dr. Brown had brought forth in his paper ought to be examined rather carefully to be of any particular value. The Mayos had reduced the mortality in connection with cases of uncomplicated umbilical herniæ, not because they split the septa, but because they did the work quickly. They got in and they got out quickly. They did not pick up a big piece of tissue in the bite of the forceps and cause a necrosis and necessarily bad union, but they did beautiful work, and in their hands the mortality was of necessity very low, not because they did any particular operation, but because they did it quickly. Whether the vitality of the patient was subserved by the Mayo or Kocher operation was a question for further discussion and experience to fortify.

DR. LOUIS FRANK said that the mortality from these hernias in his experience and according to his study had been quite large. Especially was this true of the strangulated cases and of those of large umbilical herniæ. With a small amount of gut the mortality was not high; with a larger amount of gut it was proportionately higher. The explanation of this was not so much interference with the ganglia as it was the great amount of gut placed into a cavity which was no longer accustomed to it, thereby creating direct pressure on the lung, bringing about possibly pneumonia, circulatory interference, and many conditions in this way rather than through the anesthetic.

He thought the operation of Mayo was a great advance, and the best one advocated for this condition, as it was based upon proper mechanical principles.

His experiences in cases of strangulated umbilical hernia had been very unfavorable. He thought the worst surgical emergency he ever saw was one of strangulated umbilical hernia, in which the entire skin covering the sac itself was beginning to be gangrenous. This had been going on but a short time. Double resection was necessary, the patient dying from absorption that preceded operation, and not from peritonitis. He had seen these hernias occur in women who had not borne children, in whom there was not so much diastasis, but invariably in large, fat women, weighing between 280 and 300 pounds, and often giving rise to great difficulty in the treatment and proper handling of them.

DR. ALBERT GOLDSPOHN, of Chicago, stated that about ten years ago a woman came to him with the largest umbilical hernia (not strangulated) that he had ever seen. It was as large as

a man's head. She had more than one-half of her intestines in the sac. She wanted an operation. At that time the frightful mortality, the great inefficiency in the technique, made the operation to the surgical judgment of that time practically unwarranted. For some reason he delayed operating in order to study the case, and then, a month later, operated. One of the salient points he emphasized was to do away with the tension that ordinarily existed upon the closing sutures that held the tissues together that were to unite. The tension was so great in these cases that the sutures tore out, or the circulation was cut off, the vitality of the tissues being so reduced that they could not unite, and we had recurrences. Here Dr. Goldspohn illustrated on the blackboard how to get rid of tension on the sutures with which one did the closing.

The majority of these herniæ were not umbilical, but periumbilical. They began in little slits about the umbilicus in the linea alba, some below, some above.

DR. JOHN D. S. DAVIS, in speaking of end-to-end anastomosis, did not think that the objection raised to it was practical. It depended where the anastomosis was made. If it was made low down in the colon, then there would be retrostalsis of fecal matter into the intestine, which would probably cause pain. There was not much regurgitation of fecal matter in the high operation. He believed the end-to-end anastomosis with the Murphy button was ideal.

DR. WILLIAM D. HAGGARD reported a unique case of strangulated femoral hernia which sloughed, resulted in a fecal fistula of some weeks' duration, and finally healed spontaneously. As the result of the strangulated femoral hernia, suppuration followed. The woman had no surgical relief, like Dr. Brown's case, and the natural conclusion was that Dr. Brown's patient would have inevitably died without it. Every physician who saw Dr. Haggard's case thought the woman would die, but she survived with a fecal fistula. She was sent to him for operation seven or eight weeks after the occurrence. She had a fecal fistula, with attachment of the mucosa to the integument. It reminded him very much of the old cases of permanent biliary fistula, in which formerly surgeons sewed the gallbladder to the skin, and so in this case he did not feel sufficient time had elapsed to make an incision and do an end-to-end anastomosis. He therefore made a long incision and around this attachment of mucosa to the skin, and, very greatly to his surprise, as the result, granulation caused the fecal fistula to close. While he felt it was out of place to report this case, still the patient got well without operation.

DR. H. W. LONGYEAR called attention to McGraw's method of treating cases of fecal fistula, saying it was an extremely valuable procedure. It was very simple, and the results obtained by it were excellent. One may make the anastomosis with the Murphy button, or close the fistula after the method of McGraw.

DR. WILLARD BARTLETT, of St. Louis (by invitation), referred

to an important physiological point, namely, the change that takes place in consequence of the patient losing so much of the intestines. He quoted Professor von Eiselsberg, who, in writing on lateral anastomosis, reported two hundred cases of his own, as saying that where the lower portion of the ileum was anastomosed into the sigmoid, uncontrollable diarrhea had occurred in every case, owing to the fact that the soft feces near the rectum were not retained sufficiently long to enable them to become solid.

DR. BROWN, in closing the discussion, took issue with Dr. Longyear regarding the McGraw method, not with a view to condemning it, because he had used it in gastroenterostomy satisfactorily, but in this special case the advocacy of this method was out of place.

Relative to the point made by Dr. Bartlett concerning diarrhea following these cases, his experience had been limited to this one case. Instead of having a diarrhea, the woman had constipation, and he had to resort to castor oil frequently to move the woman's bowels.

DR. ROBERT T. MORRIS, of New York, read a paper entitled, CONSERVATION OF THE NATURAL RESISTANCE OF THE PATIENT IN SURGICAL WORK.¹

DR. J. HENRY CARSTENS said he had been an advocate of rapid operations for a long time. Those who aspired to become surgeons should cultivate manual dexterity, so that they could operate rapidly. The man who could not anchor a kidney in ten minutes or thereabouts had better give it up; and the man who could not take out an ordinary appendix in eight or ten minutes and sew up the wound ought to practise something else than medicine.

This was the way he felt about it. Sometimes one had a bad case with adhesions to deal with; but an operation for any ordinary case of ovarian tumor ought to be done in ten minutes. The same held good for the average case of vaginal hysterectomy. He thought one should be able to do a vaginal hysterectomy, with clamps, in less than ten minutes. He would allow fifteen minutes for abdominal hysterectomy.

He agreed with Dr. Morris as to flushing out the abdomen, but there was a limit to it. He did not flush out the abdomen regularly in all cases, but did it probably in one out of fifty cases when there was infection.

DR. H. W. LONGYEAR did not think we should depend altogether upon rapid operating for conserving the forces of the patient. The patient should be prepared just as though one was going to do a long operation, then the operation should be done rapidly if possible. No surgeon could predict in a given case whether he was going to have a short or long operation. The operation might be a long one when the surgeon thought it would be a short one.

¹Will appear in a succeeding number of the JOURNAL.

He urged the use of rubber bags, heated by hot water or by electricity, for the conservation of body heat.

DR. ALBERT GOLDSPOHN stated that a small amount of anesthetic, a brief operation, as small exposure of viscera as possible, which meant a small wound, and quick work were important points. This was one side of the question.

The other side was, what were the indications as to what ought to be done, and what was reasonable for the surgeon to do in the case? One might need to do an abdominal section. In some cases it was necessary to do three or four operations, as, for instance, plastic work, a curetment, a cervix operation, and occasionally an operation for floating kidney. He had not much sympathy with those who did quick operations and ignored what they ought to do and could do for patients, so as to bring about much greater improvement in their future health. One should use surgical judgment, and take fundamental principles as a guide in determining how short or how long an operation should be conducted in each case.

DR. JOHN D. S. DAVIS agreed with everything the essayist had said with reference to the kidney and appendix. So far as the kidney was concerned, he had been both patient and operator, and in speaking of hemostasis, he said it was never necessary to ligate an artery in kidney work. The operation could be done quickly and the patient removed from the operating table in good condition.

As to the appendix, by simply folding the intestine together it was known to unite, and it would do this whether it was exposed to air or not. There was no necessity of scarifying it or of denuding the epithelium.

DR. JOHN YOUNG BROWN said that in the rapid advance made by abdominal surgery we were prone to lose sight of certain things, and in this connection he referred to the early work done by Dr. Morris along these lines, saying that surgeons were coming now to where Dr. Morris started. Fourteen years ago, when he began the practice of medicine, he had occasion to look up this subject, and found Dr. Morris fighting for the same principles that surgeons were contending for to-day, namely, early operation in cases of appendicitis and search for the appendix.

DR. MORRIS, in closing the discussion, said that he used little or no drainage. It was a matter of surgical judgment. He never used a drain larger than a cigarette. He used gauze wound loosely covered with gutta percha tissue, and not gauze packing. Occasionally the case that appealed to surgical judgment was one in which a good deal of flushing must be done; fecal matter must be flushed out, yet he had seen fecal matter encapsulated in a case of perforation in typhoid and recovery occurred and, in operating for adhesions a year or two later, he found the encapsulated fecal matter. So we did not need to flush quite so often or so thoroughly as we had previously believed was necessary.

It was true, as Dr. Longyear had said, one might have to pro-

long an operation unexpectedly. But the principle should be kept in mind to get in and get out of the abdomen as quickly as one could, and not get into the habit of puttering, because anesthesia to-day was pretty safe, the assistants were ready, and everything was at hand for the comfort of the surgeon; but above all, one should not forget the patient.

STERILITY DEPENDING UPON RETRODISPLACED UTERI,
AND THEIR RELIEF BY THE ALEXANDER OPERATION,
WITH REPORT OF TWELVE SUBSEQUENT
PREGNANCIES.¹

BY
HERMAN E. HAYD, M.D.,
M.R.C.S. Eng., Buffalo, N. Y.

I do not propose to discuss to-day those mooted questions upon which there is so much difference of opinion—whether the sterility seen in retrodisplacements is due to the displacement, or to the associated catarrh so frequently present with these displacements. No doubt both factors are responsible for the sterility; in some cases the proper entrance of the male generating fluid is obstructed or interfered with by reason of the altered position of the womb, while in another class the abnormal position of the uterus interferes with the proper circulation of the organ, and, as a result, there is produced a catarrhal endometritis with its discharges, which in many cases is lethal to the spermatozoon. One thing, however, is certain, that married life which has been unfruitful for years often becomes fruitful when a retrodisplaced uterus is corrected, whether by mechanical or operative measures.

The Alexander operation was designed and beautifully executed to meet a specific class of suffering women, namely, those with uncomplicated retrodisplaced uteri; and the success which has followed its careful execution in properly selected cases has been most satisfactory to many careful, practical and discriminating surgeons. Some of you may maintain that a retrodisplaced uterus, which has occupied this position for a considerable time, always has adnexal disease, but this cannot be true, as there are many women who have had a retroverted uterus for months and years, and in which

¹Read at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists at St. Louis, Mo., Sept. 13-16, 1904.

the tubal and ovarian trouble, if at all present, was so slight that they were cured by a curettage or by placing the uterus in a normal position, either by a pessary or an Alexander operation. Occasionally a mistake may be made in diagnosis and a retroverted uterus with slight adhesions, or with some slight tubal or ovarian trouble, may be operated upon. No particular harm could come to the patient. She would simply continue to suffer, and perhaps more than she did before the Alexander operation was performed. A section would be indicated, as it was originally. The tubes and ovaries and adhesions would be dealt with as the necessities of the case required; but the uterus will be found in normal anteposition. However, such mistakes in diagnosis should rarely be made by men of our experience, because each and every one of us knows when a uterus is movable within normal limits, and can usually under chloroform distinguish diseases adnexa.

Since the Alexander operation has been so freely accepted by many competent surgeons there has developed an over-zealous class of operators, who have extended the proper and limited field of its usefulness, and have included in their list of cases retrodeviated uteri with adhesions and with more or less marked adnexal disease, supplementing the original and limited operation by opening the cul-de-sac or abdominal cavity and attacking the complications from these routes. This method has never appealed to me, because I prefer, when the peritoneal cavity must be opened, to open it in the median line and do what surgery may be necessary on the tubes and ovaries, and then shorten the round ligaments intraperitoneally. A dangerous class of operators exist, however, who have discarded the simple Alexander operation, and who shorten the round ligaments extraperitoneally, but always open the canal and peritoneal cavity on each side, so as to make what they claim as a more certain and more permanent operation, breaking up adhesions of the uterus if they exist, and removing the tubes and ovaries, or doing conservative work upon them through these openings. Our distinguished member, Dr. Goldspohn, at our Cleveland meeting three years ago, gave as his reason for doing his so-called bi-inguinal celiotomy the number of failures which resulted from the simple operation, and the inability of the ligaments to stand the test of pregnancy and future delivery, and the difficulties associated with making an absolute diagnosis unless the finger is passed through the internal ring and the tubes and ovaries palpated on each side in the abdominal cavity.

I accepted his challenge then, and promised that I would report

my results after the simple Alexander operation where pregnancy and parturition had taken place; and I beg now to report in detail twelve cases where the Alexander operation had been performed with more or less plastic surgery of the vagina and perineum, which have stood that test, and upon last examination, some in months, and others in years, after the operation was performed, the women were well and happy, and the uterus was in perfect anteposition.

In fact, in every case of pregnancy which has followed the Alexander operation in my list the uterus has remained in position, and I believe that the pregnancy contributed largely to the success of these operations and the general well-being and comfort of the women. A new uterus was made, muscular tissue in the round ligaments was increased in amount, adhesions to the scar and skin were separated and torn loose as the growing uterus went higher into the abdominal cavity, and after the labor had taken place a normal involution of all these structures set in and a natural and satisfactory and happy puerperium resulted. I have no reason to doubt that many other women upon whom I have done the Alexander operation have also borne children; but these cases which I report to-day I have personally confined, or they were attended in their confinements by intimate friends, so that I had the opportunity of examining the women repeatedly since their babies came. Of these 12 cases, three (Nos. 1, 3, 5) have had two children. One (No. 8) had three children; one (No. 2) had one large male child delivered with forceps, in which a bad tear of the cervix resulted, and which I sewed up three months after the baby was born. I also did a trachelorrhaphy for this woman when I did the Alexander operation, and I frequently curetted her for induced abortion attended with fever and chills, between the time of operation and the birth of this last baby. In No. 4 I did the Alexander operation in the second month of pregnancy; in No. 11 pregnancy took place one month after the operation; and No. 8, in her despair, adopted a baby and, when that baby was four months old, she became pregnant. Moral: Never despair.

It seems to me that this report should forever set at rest any dispute as to the ability of the round ligaments after they have been shortened by the simple Alexander operation, to stand the test of pregnancy; and, secondly, that a retroverted uterus of months, and even years, standing can have physiologically healthy tubes and ovaries, and that such facts can be demonstrated without putting the finger into the peritoneal cavity through the incisions; and if

NAME AND DATE OF OPERATION.	SUBSEQUENT PREGNANCY.	RESULT AT EXAMINATION AND DATE OF SAME.
1. Mrs. R. September 22, 1897. Perineum, Cervix and Alexander.	First baby 19 months after operation. Second baby 11 months after above.	February 2, 1904. Uterus in perfect position, six and one half years after operation.
2. Mrs. D. November 29, 1897. Cervix and Alexander.	First baby January 1904; but I have attended her in three provoked miscarriages and curetted her after each one.	April 10, 1904. Uterus in perfect position, and to-day sewed up a double laceration as a result of a forceps delivery for last baby.
3. Mrs. B. March 21, 1898.	January 1902. Delivered her to-day, breech presentation. A fine boy, and only child and married thirteen years. Also girl, July 2, 1904.	July, 1903. Uterus in perfect position. August 15, 1904. Uterus in perfect position.
4. Mrs. W. February 24, 1898.	Retroverted pregnant uterus. Two months.	July, 1902. Uterus in perfect position, and no bad result followed operation. Baby came at end of gestation.
5. Mrs. B. July 20, 1898. Sewed up cervix and did anterior and posterior colpor. and perin.	August, 1899. A boy. May 8, 1902. A boy. Two miscarriages since, one two months, the other one.	August 2, 1904. Uterus in perfect position.
6. Mrs. W. April 21, 1901.	March 14, 1903. A girl baby.	March 14, 1904. Uterus in perfect position.
7. Mrs. B. January 14, 1901.	January 11, 1904. A girl baby. Breech presentation. Died. Adopted a baby before this came.	July 28, 1904. Uterus in perfect position.
8. Mrs. R. January 17, 1901. Dr. Ingraham removed right tube and ovary in 1900.	May, 1902. A boy. August, 1903, another boy. Another baby July, 1904.	July, 1903. Uterus in perfect position. July 28, 1904. Uterus in perfect position.
9. Mrs. M. December 4, 1901.	May, 1903, A boy.	July, 1904. Uterus in perfect position.
10. Mrs. B. October 25, 1902.	March, 1904, a girl.	July, 1904. Uterus in perfect position.
11. Mrs. S. February 26, 1902. Did trachelorrhaphy and anterior and posterior, colpor. and per.	December, 1903, a baby.	July, 1904. Uterus in perfect position.
12. Mrs. C. May 27, 1902.	March, 1904, a baby girl.	August 26. Uterus is in perfect position.

I can report 12 cases, that number could be multiplied indefinitely with the accretions of other operators who do the Alexander operation frequently—as, Longyear, Frederick, Mann, Brunn, Cleveland, Martin, and a host of others.

The operation, as done by me, is to pick up the terminal ends of the expanded and spread-out ligament at its origin at the external ring, gradually and carefully pull them together, so as to get a better hold of the stronger and bigger part of the ligament in the canal, and carefully pull it out three or four inches, as the case requires; in fact, until the body of the uterus can be felt against the abdominal wall; cut off the frayed and bruised part of the ligament, and fix the stump to the pillars of the ring. The canal is never opened deliberately, and is only nicked or slightly opened when the ligament does not pull out easily; and the internal ring and abdominal cavity is never opened under any pretense whatsoever; in other words, the Alexander operation is restricted to that class of suffering women—by no means small—who have retrodeviated uteri without adhesions and without appreciable tubal and ovarian involvement, in whom a pessary has been worn with discomfort, or has not been tolerated with satisfaction; and after ten years of increasing experience, I can truthfully say that no operation in the whole domain of surgery has given me happier and more satisfactory results. Failures have occasionally occurred, but they have been so few that the grand total of successes makes me ever ready to recommend this simple operation without mortality, and easily performed by any surgeon who can be trusted to do satisfactorily any operation—where a little care and patience are required—when once its technique is understood.

493 DELAWARE AVENUE.

DR. ALBERT GOLDSPOHN was glad to hear this excellent paper giving a report of cases of retroversion of the uterus treated surgically, because the majority of the reports on this subject were not satisfactory. They were incomplete, because the authors had not observed their cases to a sufficiently remote point after the operation, namely, childbirth, and even further observation of such patients. All the cases of retroversion that had been operated on should take in what the speaker would call the double test of pregnancy. The simple test that these patients walked out of the hospital, had no trouble afterward, did not have difficult labors, etc., was not sufficient.

There were a great many women who had adhesions, who had some inflammatory disorganization of the appendages, in addition

to a retroversion, and the reasons calling for operation in the complicated cases were much greater than those calling for operation in simple cases. The majority of the simple cases could be tidied along with pessaries. The simple Alexander operation was a competitor of the pessary, and was not on a very much higher plane than that. When one could do more thorough work, after having made a hole in the peritoneum anyhow, he could not comprehend why he should not do it. The inguinal ring was wide enough to insert one finger or two simply by stretching. When one came to the much larger class of women with complications, adhesions, etc., the benefits of the simple Alexander operation were not comparable with those obtained by more radical measures.

DR. H. W. LONGYEAR said he agreed so perfectly with Dr. Hayd's findings, and his results were so similar to those in his own cases, that there was little to be discussed. He had observed four pregnancies following a modification of the simple Alexander operation, two of which he reported a year ago, and two had been reported to him since. He did not attend the cases in confinement himself excepting in consultation, but these were attended by professional friends of his, who reported the cases to him.

DR. D. TOD GILLIAM accorded the Alexander operation a very important place in simple or uncomplicated cases of retroversion of the uterus. He had also great admiration for the operation of Dr. Goldspohn, in that it subserved a double purpose. Goldspohn not only did all that could be done by the Alexander operation, but he was able to see by his method what was inside the abdominal cavity. He had been so frequently misled by conditions in making an ordinary gynecological examination, and in cases that had consulted other physicians and to whom the Alexander operation had been recommended, in which conditions were found intra-abdominally that the Alexander operation could not remedy and the patients would have been worse if they had submitted to that operation, that he was willing now to open the abdominal cavity in a case in which there was a retroversion of the uterus to satisfy himself what the condition really was. He had been repaid for doing this. He had found pathological conditions that would have gone unobserved, many of which would have ended tragically if not attended to. By means of a small incision in the median line of the abdomen one was able to do effective work.

DR. HAYD, in closing the discussion, said that the object of his paper was not to discuss either the Gilliam or the Goldspohn operation, but to demonstrate that it was possible for a retroverted uterus to exist uncomplicated with tubal and ovarian mischief; that after an Alexander operation that uterus would conceive, and the woman would go on to the termination of her utero-gestation, and be delivered without any difficulty, without any complication, and that her uterus would stay in place afterward.

A UNIQUE CASE OF CIRCUMSCRIBED INFECTION OF THE
PLACENTA AND EXCESSIVE VOMITING; WITH RE-
MARKS ABOUT HYPEREMESIS GRAVIDARUM.¹

BY

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THE extremely hidden and rare form of infection that existed in the following case makes it worthy of record, and its occurrence, together with hyperemesis, demands consideration, even if it have merely an accessory causative relation to the latter condition.

Mrs. A. L., aged 19 years, a farmer's daughter and a school teacher, was always a healthy girl and had no disease, aside from measles at six years, scarlet fever at seven years, and whooping cough at ten years of age. There is no neurosis nor other hereditary taint discoverable in her or among her nearest kin. Menstruation began at 12 years of age, and recurred every month after that until March 1, 1904, twenty-five days after marriage. It lasted usually six days, and was rather profuse, but painless. There was usually no pain in the lower part of the body, nor leucorrhea, during the intermenstrual periods. About one month after the time of her last menstruation she began to vomit after most meals, and sometimes also between them. The patient says that the matter of being pregnant was not unwelcome to her, but that she wished for it. She declares positively that no one made any application to her womb, nor introduced anything into the mouth of it, nor gave nor advised anything to take or to do to bring on a flow, and the family physician, a most estimable lady, says that she, from a knowledge of the patient and her family and surroundings, is convinced and willing to certify to her belief under oath that nothing of that nature occurred. Recumbency during and after meals made the trouble a little easier, but medicine did not afford relief.

This condition continued and grew worse until the uterus was emptied, on June 27, 1905, three and a half months after her last period. From the lassitude, headache, soreness in the extremities,

¹Read at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists at St. Louis, Mo., Sept. 13-16, 1904.

and occasionally chilly sensations that previously existed, it is probable that she had more than normal temperature for a month, at least, previous to the last three days of irregular chills with temperature ranging from 102° to 105° , with a pulse of from 120 to 135 per minute. She says that a colored discharge, small in amount, has existed for two months, but that she noticed no odor nor uterine contractions. Her physician, however, observed a scant, but very offensive, discharge on examination, during the last few days. The patient says that she lost twenty-five pounds during the last two and one-half months.

Examination.—The patient is a slender, poorly-nourished, but not markedly anemic woman, weighing about 125 pounds, with the thoracic and abdominal organs normal aside from the stomach, and the urine showed a slight amount of albumin. Her pulse at the time was 126, and temperature was $103\frac{1}{2}$ degrees. The abdomen was not distended, and only showed a little tenderness over the pelvis. Bimanual examination discovered the uterus in size, shape and consistence corresponding to a pregnancy of from two to three months, with nothing abnormal about its position or mobility, and no changes in the external os or in the cervical canal other than those that are peculiar to a normal pregnancy. But the tenderness to palpation was markedly increased in the uterus, and a foul odor was found arising from a little colored discharge upon the finger that was squeezed out of the cervical canal.

Operation.—After a dose of Parke, Davis & Co.'s aseptic ergot had been given and the patient anesthetized, the cervical canal was dilated, not by divulsion, but by round and slightly conical steel cervical and rectal dilators, sufficiently to admit one finger readily. Through the membranes, which were intact, the small fetus could be palpated, but the placenta, which was attached upon the side of the uterine wall, presented a soft or seemingly detached spot upon its border. After irrigating the part of the uterine cavity so far explored with 2-per-cent. lysol solution by means of a Prager return-current uterine douche tube, the placenta was detached by an index finger, which was rendered sufficient in length by the outside hand, which crowded the uterus downward. This fixed it in such position that the more firmly attached parts of the placenta could not escape and all parts of the uterine cavity could be explored. The contents were then removed by the aid of lithotomy and placenta forceps, and the uterus washed out with 1-per-cent. lysol solution. It contracted well. After another

digital exploration it was again irrigated, and then loosely packed with iodoform gauze, the vagina likewise being tamponed with the same material.

The placenta was obtained quite completely and in one piece, with only small fragments removed in the second exploration. Upon the edge of the placenta was a distinctly circumscribed area, of the size of a twenty-five cent piece, of soft, structureless, partly liquefied tissue, of grayish color, and giving off a very offensive odor. This septic mass was observed by all the assistants present, but unavoidable circumstances prevented the preservation of a specimen or the making of a culture for bacteriological diagnosis.¹ Several hours after the operation the patient had another severe chill, and temperature rose to 105°, showing that the three lysol intrauterine irrigations given before and during the extirpation of the placenta had not succeeded in preventing the entrance of some septic material into the veins. But this temperature soon dropped and continued at a low range, without chills or nausea, for about a week after operation, when the patient was quite bright and made a good recovery, without remaining foci of infection in the pelvis or elsewhere.

In the literature allied to this subject, without an exhaustive search in the post-mortem reports, I have not found another such case discovered *during life*. But in the following fatal cases of hyperemesis gravidarum similar and other results of infection were observed post-mortem. Jardine¹, Glasgow, in an autopsy upon one of these cases, found an abscess in the pelvis of the right kidney, blood in the stomach and purpura hemorrhagica. Lindemann,¹ Solowief, in another case observed fatty degeneration and cloudy swelling in the liver and spleen, and in the kidneys cloudy swelling and beginning coagulation necrosis, chiefly in the convoluted tubuli uriniferi. Ludwig Pick,³ in the best contribution on this subject, reported twenty-two cases of this infection treated in Schauta's clinic; and in two fatal cases the following was found: (Case 6) "Inflammation deciduæ purulenta" and septicemia, with an ovum of three months intact. This is commented upon by Behm as an extremely remarkable case. It is anatomically almost identical with my case above reported, but clinically, nothing is said of chills and no discharge, at least not of a foul character, was noticed; therefore, no operative interference was instituted and as in all other cases, the morbid condition was not dis-

At a private house in a country town, and in haste to reach an only train.

covered during life. In the other case of Pick (No. 22) a purulent diphtheritic endometritis and an enlarged spleen were found, along with syphilis. It is clear that the very unusual pathological conditions that existed in my case and in others do not belong to the regular category of emesis nor of hyperemesis gravidarum, but they are accidentally aggravating morbid processes, whose proper place in the etiology of this disease will appear after a consideration of the most rational theories of its pathological nature.

The theory of Kaltenbach⁴ that it is a functional neurosis, that is, hysteria, is manifestly incorrect, for most of these patients bear no hysterical stigmata at any time, and ordinary emesis of pregnancy is more frequent than hysteria, while hyperemesis is not as frequent in its occurrence. The theory of Ahlfeld of exaggerated nervous irritation of the stomach arising from a multitude of gynecology disorders and abnormalities in the pregnant uterus itself is the view that has been most generally accepted, and it comes more nearly to being correct than any other heretofore advocated. It is plausible enough in cases where abnormal conditions in or about the uterus can be discovered as sources of irritation, but it is not so in those where this is not the case, but, nevertheless, present severe emesis; nor does it account for the reason why the copious use of normal saline solution does so much good in their treatment. Again, Dirmoser⁵ advocated a theory of autointoxication which, he claimed, arose from fermentation of carbohydrates in the stomach and from decay of albuminous products in the intestinal canal, arising from coprostasis incident to the enlarged uterus. If this were so, then the vomiting should be worse and more frequent during the second than the first half of pregnancy; and it should be present also in cases where tumors of a different character impede the intestinal canal. Furthermore, it is not really possible upon this hypothesis that emptying the uterus should stop the vomiting usually at once.

The actual pathology of emesis and hyperemesis gravidarum is probably pretty nearly discerned by the theory of Baisch⁶, supplemented by that of Behm,⁷ both of which were recently promulgated. The former holds that the ovum is the true and only regular source of origin of some unknown (possibly chemical) substance that would be transmitted through the blood, or that the chorionic villi cause a nervous irritation in burrowing into the endometrium, and that either the unknown substance or the functional nerve irritation, or both, cause vomiting in a reflex manner by acting upon the vomiting centre in the medulla. He

regards the element of reflex action (via the nervous system) as indispensable in this process, and makes this, indeed, most plausible by citing that some such impulse of thrift must be conveyed by the nervous organization to cause the enlargement of the *mammæ* and developments of other parts of the body that are associated with gestation. According to Baisch, there are three stations in this process: (1) the growing ovum, and all abnormal uterine and pelvic conditions as accessory or complicating causes; (2) the central vomiting centre; and (3) the motor, or secretory, function of the stomach, or both. An abnormality in either of these three stations may result in excessive vomiting, either by an exuberent impulse or irritation from the first, or from lowered tone or nerve resistance at the second, or from lowered or disordered functional capacity in the digesting apparatus. This view takes in all the pathologically and clinically different types of *emesis gravidarum* that we meet. Thus, while the growing ovum is the chief source of irritation in all cases, all other morbid conditions in or about the uterus that contribute to the trouble, such as multiple fetation, *hydramnios*, pathological cervix or cervical canal, displacements of the uterus and abnormal conditions of the parametrium or pelvic peritoneum, are accessory or aggravating causes that intensify the irritation. Then hyperemesis would occur even if conditions at the vomiting centre and at the stomach were normal. In hysterical, neurasthenic and similar neurotic cases the excessive sensitiveness of the reflex centre will induce hyperemesis when the irritation transmitted from the growing ovum is not excessive and the stomach also is normal. And, thirdly, women who have previously been more or less afflicted with a weak or disordered stomach, leaving out now the vomiting which is due to disorders of the brain, can have hyperemesis when the wave or current of irritation is not excessive, and the central transmitting center is also normal. This three-sided or triangular pathology suggests the correspondingly varied nature of the treatment, according to which side in the pathologic process is the more prominent in any given case.

So far the theory of Baisch is quite logical. But he has to assume an unknown factor, namely, what is the nature of the irritation, or, possibly, chemical something that is given off from the growing ovum? This, his missing link, is supplied with a marked degree of plausibility by the theory of Behm, namely, that syncytial elements—cells and buds—are given off from the

growing ovum during the first half of pregnancy until the chorionic villi on the free surface of the ovum have been shed and the placenta has been fully formed. These cellular elements are held to cause an intoxication of the blood which, acting upon the vomiting centre, causes the emesis.

That these syncytial elements abound in the blood of pregnant women is certified to by R. Veit,⁸ C. Ruge,⁹ Gottschalk,¹⁰ Poten,¹¹ and others. Veit and Gottschalk have tried to make it account for the kidney of pregnancy, and for albuminuria occurring during premature detachment of the placenta. The former author has noted the occurrence of exfoliated cells from the chorionic villi in the pulmonary arteries of eclamptics. But Carl Ruge says these cellular elements are too generally found in the blood of pregnant women to have any etiological bearing upon eclampsia.

A knowledge of what these estimable investigators had found, on the one hand, and a striking experience on the other, that normal salt solution very carefully, frequently and persistently administered by the rectum—so useful in septic cases—was uniformly successful in his hands in abating this hyperemesis also; these several facts were the basis upon which Behm projected his theory. He treated two severe cases of hyperemesis gravidarum and four milder ones, all of them having no abnormalities in the pelvis, with normal salt solution by the rectum, with uniformly good success. He tested its action in severe cases by interruptions and temporary substitution of other remedies, in such a manner as to preclude the possibility of mere suggestion figuring in the effects of the remedy, which can be excluded. The patients were kept recumbent in bed. Each morning they received first an evacuating enema, and after that one-third to one-half liter (about a pint) of the lukewarm salt solution every two hours. Very marked improvement followed in all cases at once, and the disorder subsided in the first severe case in fourteen days and in the second in six days. During the most of this time, at first iced milk in small quantities frequently given and, later, light diet were well received.

The view of Baisch that the growing ovum is the source of the irritating something, and likewise the theory of Behm that that something is composed of the epithelial elements from chorionic villi, are both strengthened by the fact repeatedly observed that the vomiting in such cases has not ceased after abortion even, until some remaining diminutive remnants of placenta were carefully and completely removed. The fact that primigravidæ suffer

from this disorder more than multigravidæ Behm explains by assuming some degree of immunity acquired by previous gestation and increased by repetition of the same.

He calls attention to the fact also that his so-called physiological theory of the cellular syncytial elements circulating in the blood during the first half of pregnancy does not account, unaided, for three unusual classes of these cases, namely:

1. Where the vomiting does not begin until the second half of pregnancy.

2. Cases in which it does not cease after the uterus is emptied.

3. Cases that die although vomiting has ceased.

But he explains these quite plausibly as due to accidentally complicating or aggravating organic lesions occurring in some part of the body, and bearing in their evil effects upon either the pelvic organs or upon the vomiting centre or upon the stomach. As such pathologic accessories, he mentions the following:

1. Disorders of the brain, kidneys, liver, gastro-intestinal canal and peritoneum that, he admits, do not strictly belong in the category of hyperemesis gravidarum.

2. All the numerous abnormal conditions about the cervix uteri, cervical canal, the endometrium, the uterine walls as to tension and otherwise, and abnormalities in the position and condition of the uterus and its adnexæ and pathologic states of the pelvic connective tissue planes and peritoneum, all of which have repeatedly been blamed as the *essential*, instead of accessory, causes of the hyperemesis, chiefly by the large majority of authors who believe, more or less, in the reflex theory.

3. Septic infection chiefly in or near the genital tract supplementary to the syncytial intoxication. In this category belongs the unique case with the report of which, *in vivo*, this article begins, and two post-mortem cases of L. Pick³ also mentioned above.

4. Autointoxications chiefly from the gastrointestinal canal (theory of Dirmoser stated above).

The two things from which I have seen the most good in this disorder in past years are: (1) Complete and absolutely constant recumbency in bed, with all possible exclusion of everything that might annoy, worry or excite the patient. (2) Copious vaginal drainage of water from the pelvis by means of a copious packing of sterile gauze so placed around the cervix and loosely distributed throughout the expanded vaginal cavity as to secure contact with the largest possible surface without objectionable pressure

anywhere. This packing is made to take up at least two ounces of boroglyceride, and it is renewed about every third day.

In the extreme cases I have seen almost no good from the many drugs recommended and given by mouth. In two such cases, however, that were rapidly approaching a condition of marasmus, I am satisfied that life was saved by dilating and speedily emptying the uterus under an anesthetic, using a finger chiefly as a curette. A battery and a boiled rectal electrode for introduction into the uterus were ready to secure prompt contraction of the uterus afterward, if necessary, by interrupting a gentle galvanic current. Possibly this interference might have been avoided in these cases had the rectal use of normal salt solution for this affection been known at that time, and carried out in the manner that Behm demands. A less assiduous manner of administering this remedy probably accounts for the more indifferent results which some others have obtained from it.

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DR. H. W. LONGYEAR narrated a case in which he was obliged to empty the uterus, and tried treatment with normal salt solution, without any beneficial results. He kept the rectum as full of salt solution as he possibly could, and also used a tamponade of boroglyceride. The patient was extremely neurotic, which might have had something to do with the matter. Her mother, who took care of her, was about the same type of individual, and perhaps on that account the treatment was not followed by a good result.

DR. HENRY SCHWARZ said that all obstetricians thought at one time or another that they knew how to cure cases of hyperemesis

gravidarum, and yet every once in a while a case would come up which would not be affected by any of the known remedies. The uncontrollable vomiting of pregnancy, like other conditions for which a great many specifics had been recommended, was not controlled by any of them. The injection of salt solution into the rectum undoubtedly cured a number of cases. Certain cases could only be saved by emptying the uterus.

DR. GOLDSPOHN, in closing the discussion, said, in regard to the use of normal salt solution per rectum, that the technique of this was more perfect than he would have made it before he read Behm's directions, and certainly he got much more of the normal salt solution absorbed than one of his patients would have absorbed before he read Behm's directions how to use it.

DR. ELBRECHT asked whether Dr. Goldspohn regarded those cases that he had treated successfully as instances of hyperemesis gravidarum?

DR. GOLDSPOHN replied, yes, and not simply those that required operative interference. Cases overstepping the ordinary normal boundary he would call hyperemesis gravidarum.

THE ADVANTAGE OF LIMITING ARTIFICIAL INTERFERENCE IN OBSTETRIC PRACTICE.¹

BY
AUGUSTUS P. CLARKE, A.M., M.D.,
Cambridge, Mass.

THE purpose of this paper, from its title, may seem at first somewhat different from the aims gained through the impression made by the many precepts as usually set forth for guidance in the management of cases coming under the care of the obstetrician. The treatment of the subject, however, when made in a broad and conservative manner and with the insistence that due reliance be placed on certain of the instinctive powers of nature by which the ordeal of parturition can be safely passed through, will really need no apology when it becomes fully realized how numerous have been in labor the serious mishaps which have subsequently been brought to the attention of the gynecologist, or the suffering through which the mother has often had to pass. My own observation in regard to the nature of this class of cases was begun in

¹Read at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists at St. Louis, Mo., Sept. 13-16, 1904.

the earlier years of my practice. I had noticed that there was an inclination on the part of many obstetricians to have resort at the earliest possible moment to the use of forceps for the ostensible purpose of lessening or abridging the hours of labor of the mother. This practice had its inception before the significance of a perineal or a cervical laceration or of other traumatic lesion had become well understood. The variety in style or alteration in the manufacture of forceps or other device to be employed in midwifery, has always been a tempting bait to be caught at by the younger or less experienced members of the profession and so the powers of Nature, often slow but safe in their operation, have not infrequently been interrupted at the expense of the incurring of a laceration in the genitalia, of more or less severity, or at that of an immediate infection of the periuterine tissues.

When one takes the trouble to review the history of the invention and employment of the forceps from the time of the elder Chamberlain, of London, to within a comparatively recent period, the fact will appear that the instrument in question has been constantly undergoing changes in form or appearance, many of which have been of the most doubtful utility; such changes in construction seem to have often been put forth in response to the caprice of the designer or to fulfil a desire to have his name connected with some device that might add to his claims as a teacher or as an authority on the obstetric art.

In the discussion of this subject I do not intend to enter into any extended consideration of those cases in which the parturition is preternatural or in which manual assistance may be necessary, or the employment of suitable or appropriate instruments should be used. All experience teaches that the occurrence of such cases often takes place and that the attending physician should be timely prepared to meet every emergency that may arise. The mere fact, however, of his being fully equipped to meet untoward complications is no reason why any device or instrument should be employed or any material manual assistance be offered to hasten delivery, unless the same is clearly indicated for the safety of the mother or for the preservation of the child.

Before proceeding further it might be well to recall the fact that the measurements of the normal female pelvis are practically as follows: the conjugate diameter including the soft parts of the pelvis is three and three-fourths inches, the transverse with soft parts four inches, and the oblique with soft parts four and one-half to five inches. The various measurements of the fetal head

are: the biparietal diameter three to three and one-half inches, the occipito-bregmatic or perpendicular diameter three to three and one-half inches, the occipito-frontal four inches, the transverse three to three and one-half inches, the trachelo-bregmatic diameter three and one-half inches, the bitemporal two and one-half, though some writers say three inches and upwards; the occipito-mental five inches. The facial extremity of the ellipse of the fetus from the top of the forehead to the end of the chin, the fronto-mental is three inches, the bimastoid two and one-half inches.

When we compare the several diameters of the normal female pelvis including the soft parts, with the various diameters of the normal fetal head, it becomes apparent that there should be adequate room for the expulsion of a fetus at term; especially so should it become evident when it is considered that there are various degrees of safe compression and of elongation to which some of the diameters here given may frequently be subject, as that of the biparietal, which may be reduced to three inches or less, and the occipito-mental may be extended from five inches to six, and even seven inches in diameter.

Among the common causes of retardation of labor is that which may be embraced in the term uterine inertia, often in consequence of a somewhat deficient action of the uterus itself or of the abdominal muscles. This may arise from debility of the constitution, either from previous exhaustion of the patient; or from some severe ordeal through which the patient has just passed; or to some mental emotion. So far as the latter factor is concerned, its influence can most often be overcome by endeavoring to exercise firm but gentle control over the patient and to inspire in her that degree of confidence in the advice offered and the skill shown in the management of the case, that is so essential to the attainment of success in every department of the medical art. In those cases in which the patient has previously been much debilitated it is often advisable to insist upon the partaking plentifully of bland but nutritious food at short intervals. Stimulants in varying quantities may also be added as the occasion may require.

Another cause of delayed delivery I have long since noticed has been the too early and free use of anesthetics. I have more than once been called in consultation to an obstetric case in which the patient, it appeared, had been in labor some forty-eight hours or more, and during the greater part of that time had been kept under the influence of ether, and that the amount of ether which had sometimes been used was from three to four pounds,

a quantity quite sufficient for the employment at an amphitheatre of a great hospital where scores of surgical operations, more or less important, are to be performed. Now, it may be incidentally remarked that any physician who contemplates indulging his patient in the use of anesthesia, beginning at so early a stage of the parturient processes cannot expect otherwise than to bring unnecessary trouble upon himself and much more upon his confiding patient.

Forceps should not be employed unless there is an absolute necessity for such use, as the resort to it is liable to be attended with more or less hemorrhage, or sepsis, or other local or constitutional disturbance, as these results, I have not infrequently seen, even when the greatest precaution against sepsis or injuries had been taken. This has been evidenced by more or less subsequent elevation of temperature, though it may not have been much, still it was sufficient to indicate that there was a lurking danger to which the patient had been exposed. In those cases in which there has been immediate emptying of the uterus by the untimely resort to forceps, the involution of the uterus will not be as complete or as perfect as it is when the fetus is expelled by the natural forces of the parturient system. Hemorrhage following will be greater and clots are liable to be retained and to give rise to trouble that may require intrauterine douches or irrigation, which practice to be carried out is often fraught with danger to the lying-in woman. The most systematic employment of the Credé method for bringing on uterine contraction will not always prove a sufficient measure against the danger, nor will the timely use of ergot or of any of its various preparations be entirely adequate to such end.

The use of the forceps in all cases requires greater dimensions in the diameters of the maternal pelvis for the safe expulsion of the fetus than when delivery can be effected by the natural processes. Therefore, when there is only, or barely sufficient, room for engagement, rotation and descent of the fetal head, the space occupied by the blades of the forceps must be compensated for by the excessive elongation of the occipito-mental diameter of the fetus or by the undue compression of the biparietal diameter. My attention was, by Dr. Wahl,¹ of Dresden, Germany, particularly

¹See also the article, Ueber die entblindungen mit der Zange an der Königl. Frauenklinik in Dresden in den Jahren 1889 bis 1. Januar, 1894. von Dr. Wahl, zwietem Assistenten. (Sonderabdruck aus *Archiv für Gynäkol.*, Bd. L, Heft 2.

called, some years since, to the fact that the space occupied by the forceps is always to be considered as being of material consequence in any case in which it is proposed that it is to be used. Though Dr. Wahl's paper had for its object other considerations to present than those which I wish to bring out, yet a careful perusal of his most excellent contribution reveals the truth that there are many dangers incident to the use of such instrument. He says that of all obstetrical operations the one in which the forceps is to be employed is attended with the most hemorrhage. In the milder class of cases in which the forceps is used (*leichten Zange*) there is liable to occur, he says, laceration of the vagina, of the cervix, and of other parts that may lead to dangerous hemorrhage, if not to the death of the mother. Before using the forceps, the medical attendant should, as already intimated, be prepared to resort, if necessary, to symphysiotomy or to Cesarean section. In the operation of version less space for the most part is necessary than in that in which the forceps may be used. In those cases in which the fetus is dead and cannot be extruded whole, craniotomy can be had recourse to and the space in which the operation is done can be reduced to the narrowest limits.

Before resorting to radical measures for relief, the condition of the patient and of the fetus should be most carefully considered, and not always the number of hours of labor that have been passed. Some women, though not seemingly very robust, have endured more or less pain attendant on labor for two, three, or more days before the birth of the child and still have recovered without the intervention of the slightest untoward symptoms, while others having a malposition of the fetus or some material departure from the normal trend of parturition have collapsed or perished quickly soon after the supervention of parturient processes. There have been many instances of this class of cases to which I have, during my professional course, been called. It is not the tenseness of the soft parts nor the mere resistance to be overcome that is most liable to affect seriously the mother; it rather depends upon the nature of the obstacle. This must be accidental in character in order for it, for the most part, to be likely to transmit unfavorable impressions to the parturient center of the spinal cord, that portion of the medulla spinalis opposite to the first and second lumbar vertebræ.

Another point in this connection I will mention, which I consider to be of much importance. It is the substitution in large

measure of external for internal vaginal examination. In almost every case a quite perfect knowledge or understanding can be obtained in regard to the position and presentation of the fetus by external inspection and palpation, without incurring the necessity of making frequent internal examinations. When it becomes essential or when I feel that the results of the external should be verified by the vaginal method this can be done after carefully sterilizing my own hands, and also the vulval and vaginal parts of the patient, by inserting the fingers gently between the lips or clefts of the soft parts so as to have the hand come as little as possible in contact with the tissues of the patient. This can be greatly aided by making free use of sterilized gauze sponges; one can be placed on each side of the labia so as to keep the parts everted during the examination.

In no case do I use an intrauterine douche or irrigation after the expulsion of the child unless there is a positive indication presented for such employment, for the secretions and blood at this time are all practically aseptic and, therefore, any attempt to modify what is cleanly will be likely to do more harm than good. Of course, if one does not feel sure of his ground, or has reason to believe that he has not been fully cautious in carrying out the details of his work, he must do the next best thing that may occur to him to correct the error or to obviate the danger which he may think there may be of sepsis.

Without going further into detail in regard to the management of this class of cases, I will take occasion to mention a portion of the results recorded in my notes and lists of some forty-two cases in which the most favorable outcome had been presented. This record comprises cases of primiparæ and multiparæ. Eighteen were cases of primiparæ. The labor of twelve cases of these primiparæ extended over the period of twenty hours, four cases over twenty-three hours, one case eighteen hours, one case over fifteen hours. In no one of these eighteen cases was there during convalescence any appreciable elevation of temperature nor was there any septic or other untoward symptoms, and no laceration of the perineum or of other structure. The recovery in all cases was normal. In one case, however, in which the age of the patient was forty years, there was no secretion of milk in either mamma. The child, a male, weighing ten and one-half pounds at birth, was sustained on well-sterilized cow's milk. The ages of these twelve mothers (primiparæ) were one 18 years, one 19 years, two 23 years, two 24 years, one 29 years, three 34 years,

one 40 years, and one had attained to the age of 44 years. The weights of the various children of these twelve mothers were as follows: of the one who was 18 years old the weight of the child, who was a male, was nine pounds; of the one who was 19 years of age the weight of the child, who was a male, was eight and one-half pounds; of the two mothers of 23 years one had a child, a female, the weight being seven pounds, and the other had a child, a male, the weight being ten pounds; of the two mothers of the age of 24 years the weight of one child, a female, was nine pounds, and of the other the weight of the child, a male, was six and three-fourths pounds; of the mother of 29 years the weight of the child, a male, was six and one-half pounds; of the three mothers of the age of 34 years the weight of two children, who were females, was seven and one-half pounds each and the other was eight pounds; the mother of the age of 40 years had a child, a male, whose weight was ten and one-half pounds, and the mother of the age of 44 years had a child, a male, weighing nine pounds. The other six cases of primiparæ had a period of duration of labor of less than twenty-four hours: one mother was aged 18 years, having a child, a male, weighing seven and one-half pounds; two mothers were aged 19 and 21 years respectively, the weight of one child, a male, being eight pounds, the other's child weighing seven pounds. The ages of the other three primiparæ were 24, 27, and 30 years respectively. The one aged 24 had a male whose weight was eight and one quarter pounds; the one aged 27 had also a male weighing seven pounds; the one aged 30 years had a female whose weight was six and three-fourths pounds.

It might be interesting in this connection to compare the measurements of the several diameters of the pelvis of the various mothers with the measurements of those of the fetal heads. Suffice it to say, however, that the diameter of the antero-posterior in almost all approached to nearly the normal standard or with the soft parts varying from three and three-eighths to three and seven-eighths inches. It is the measurement of the antero-posterior or sacro-pubic that should be most carefully considered in the management of any obstetric case, for if that diameter approaches nearly to the normal standard, one can, *cæteris paribus*, often correctly conclude that the other diameters of the pelvis are regular. In one case mentioned in which the patient was 18 years old, the child was a male, weighing nine pounds, the sacro-pubic diameter of the mother's pelvis scarcely exceeded three and three-eighths inches. This patient was one of the class

whose labor was over twenty hours. There was slow dilatation of the os uteri. External examination, however, revealed that the child was not in an abnormal position. As the descent was made the nape of the neck appeared behind the right acetabulum and the bregma to the left sacro-iliac synchondrosis. Engagement at the brim at first was slow and almost imperceptible; rotation and descent were also slow and these stages appeared to be due to the gradual manner in which the biparietal diameter was being compressed and the occipito-mental diameter was undergoing the necessary process of elongation for safe rotation and extrusion. The child, after it was born, appeared to be of high vitality and it continued to be well and active. Careful measurements of its head and the degree of overlapping of the bones and the compression it had sustained showed that these favorable features found must have reached their extreme limits for safety and that any further compression which might have been done by forceps to hasten matters would have been dangerous if not fatal to the life of the child. Of the other cases, which were twenty-four in number and which were multiparæ and which had favorable outcome both as regards the mother and the child, much could be said, though an extended consideration at this time into detail will have to be omitted.

In one case, however, I might say that the age of the patient was 37 years. Her history was that she had three times previously been delivered, twice by forceps and once by version. The children died soon after being born. The sacro-pubic diameter in this case with the soft parts was three and three-eighths inches. During the last six months I kept the patient on a much restricted diet, requiring her to take considerable daily exercise in the open air so as to improve the general tone of her system and to develop strongly her muscular powers. The duration of the labor was twenty-seven hours from the onset. There were old tears of the cervix and of the perineum, but these had given her but little trouble. Engagement at the pelvic brim was slow, so also were rotation and descent of the head. The delay was due undoubtedly to the large size of the child and especially to that of the head. Though there was no caput succedaneum, there was nevertheless a most marked elongation of the occipito-mental diameter, which measured fully seven and one-half inches, while the biparietal diameter from the compression which it had undergone scarcely measured at the time two and two-thirds inches. The child soon became active and got on well. Its weight was ten and

one-fourth pounds, not including any clothing. The patient was seven and three-fourths hours longer in this labor than in either of the other three, in each of which the delivery was effected artificially, and in all three of which the child did not survive.

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OFFICERS.

The following officers were elected for the ensuing year: *President*, Dr. H. W. Longyear, of Detroit, Mich.; *Vice-Presidents*, Dr. D. Tod Gilliam, of Columbus, Ohio, and Dr. John Young Brown, of St. Louis, Mo.; *Secretary*, Dr. Wm. Warren Potter, of Buffalo, N. Y., reelected; *Treasurer*, Dr. X. O. Werder, of Pittsburg, Pa., reelected; *Councillors*, Dr. James F. W. Ross, of Toronto, Ontario, and Dr. Walter B. Dorsett, of St. Louis.

After the introduction and adoption of resolutions of thanks, the Association adjourned, to meet in New York City in 1905, the time to be fixed by the Executive Council.

REVIEW.

THE PRACTICE OF OBSTETRICS. Designed for the Use of Students and Practitioners of Medicine. By J. CLIFTON EDGAR, Professor of Obstetrics and Clinical Midwifery in the Cornell University Medical College; Visiting Obstetrician to the Emergency Hospital of Bellevue Hospital, New York City; Consulting Obstetrician to the New York Maternity Hospital. Second Edition. Revised. With 1264 illustrations, including five colored plates, and 38 figures printed in colors. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut Street, 1904.

In the preface to this second edition the author states that such a short time has elapsed since the appearance of the first edition that a complete revision is unnecessary. A section on "The Toxemia of Pregnancy" has been written, and under this heading are to be found "Nausea and Vomiting," "Icterus," "Convulsions and Coma," and "Eclampsia." The subjects of Toxemia and Puerperal Sepsis have been brought up to date, many of the illustrations have been redrawn, and in addition three new colored plates and forty-five illustrations have been introduced.

It is difficult in a review of this kind to do much more than enumerate many of the excellent features of Dr. Edgar's work. The illustrations, many of them from photographs, are, generally speaking, of the highest order of excellence, and so faithful to nature are they that their value to the reader is unquestionably

very great. In the section on the "Examination of Pregnancy" the author lays great stress on "Asepsis," not only in labor, but also in antepartum examinations, for one never knows whether the placenta may be attached low down or whether labor may not be impending. According to two recent authorities, the vagina is not sterile, and the secretion contained therein possesses no inherent bactericidal powers. Others have shown that ordinary saprophytes and streptococci invade the uterus immediately after labor in a very large number of cases. Again, sepsis occurs not rarely in women who have never been submitted to an examination during pregnancy, and also in those who have been examined with sterile gloves. All agree, of course, as to the large number of pathogenic organisms on the vulva. The author states it as his belief that a majority of vaginæ contain germs which may or may not be pathogenic.

In referring to the use of an antepartum douche, Dr. Edgar draws attention to the fact that Hofmeier (Würzburg) is a strong advocate of the prophylactic douche, and his statistics show that his maternity has the smallest morbidity and mortality in Germany. There have been but four deaths in the last 6,000 deliveries, a mortality of 0.06 per cent. A number of the best methods for hand sterilization are given, and the author emphasizes strongly the importance of wearing rubber gloves. The illustrations in this section are especially fine.

The sections dealing with placenta previa and accidental hemorrhage have been carefully and conservatively written.

The general practitioner will find the chapter on "Antenatal Pathology" most valuable for reference, the author having consulted the well-known work of Ballantyne freely, the profuse illustrations of deformities and monstrosities having been taken mostly from Ahlfeld's atlas.

Perhaps the most interesting chapter in this edition is that relating to the Toxemia of Pregnancy, including, as we have said, the various manifestations of nausea and vomiting, icterus, convulsions and coma, and eclampsia. The writer devotes considerable space to the history leading up to the present standpoint, showing the various theories which have been evolved from time to time to explain these cases of toxemia. In this connection are cited the questions of uremia as relating to eclampsia, the relation of acute yellow atrophy of the liver to pregnancy, hemorrhagic hepatitis, the changes in the liver in pregnancy, the kidney of pregnancy, auto-intoxication, and functional paralysis of the liver. The author gives credit to Ewing, of New York, for his valuable contributions to the subject.

Ewing believes that hyperemesis and pernicious vomiting are due to toxemia, autointoxication. The toxemia of pregnancy is stated to be a condition of the blood and metabolism, arising from the hepatic insufficiency to which the pregnant woman is strongly predisposed. The pathology of the condition is then given, the subject matter being illustrated by two beautiful col-

ored plates, in which the lesion is well demonstrated. The various types of toxemia, the fulminant, acute, sub-acute, and so-called benign, are well described, and the entire chapter, including, as it does, a valuable discussion of eclampsia, should be read by every student of obstetrics.

In the chapter on "Premature Interruption of Pregnancy" the author advocates active treatment, (curettage) in incomplete and inevitable abortion. He maintains that curettage is less dangerous than the abortion and its sequelæ in cases of retention; that involution is hastened, convalescence shortened, pain and discomfort less. He believes that a large number of so-called complete abortion cases are followed by hemorrhage, subinvolution, acute and chronic sepsis. Where operation is refused, or the operator is inexperienced, he advocates packing.

In the chapters on "Physiological Labor" and "Mechanism of Labor" the illustrations are beautiful, and aid very greatly in the comprehension of a subject which has been in the past of considerable difficulty, the mechanism of labor. In the Management of Labor, all agree with the writer's opening remark, "Imitation of nature is the key to the management of normal labor." The importance of non-interference, except in the presence of a strong indication, is emphasized. The writer calls attention to the necessity of rigid attention to the details of asepsis and anti-sepsis. In speaking of the advantage of the antepartum shower bath, Dr. Edgar states that statistical proof from the Imperial Maternity Asylum of St. Petersburg shows a fall of 7.4 per cent. in the fever of the puerperium by the substitution of the shower for the old-fashioned bath tub.

In reference to the examination of patients during labor, the author speaks of the great value of external examination, a fact well borne out by the experience of many competent observers. There can be no doubt that a large number of cases of sepsis take their origin from careless vaginal examinations. There is a well-marked tendency at the present time to greatly limit the number of vaginal examinations. Dr. Edgar says that "increasing experience diminishes the necessity for vaginal examinations, and it should be the effort of the physician to acquire such familiarity with abdominal palpation and the clinical course of labor that the necessity for frequent examinations may not exist." We heartily concur in this opinion.

Leopold, Spurling, and Orb believe it possible to conduct 90 per cent. of all labors without any other than external methods of examination. The author, in our opinion, is certainly correct when he states that "proposed routine examination of the uterus and vagina, after the third stage, to determine the condition of the parts and the retention of secundines cannot be too vigorously condemned." Such an examination involves a distinct element of risk, and is not to be commended. In another chapter the author says that "the mere retention of membranes, in the absence of symptoms of infection is not a justification for invad-

ing the uterine cavity after delivery." This teaching will differ radically from that of a number of authorities, but in our experience non-interference has in such cases given, as a rule, excellent results, and is attended by far less danger of sepsis.

With reference to the treatment of post-partum hemorrhage, we believe that the use of the vaginal and uterine douche should precede the introduction of the hand into the uterus. There is very little danger in the use of the douche; in the majority of cases of hemorrhage it is successful and, therefore, the douche should be used first. Much harm could easily result in the routine introduction of the hand into the uterus. To our minds, the three factors in the treatment of hemorrhage are: 1, massage of the uterus; 2, hot vaginal and uterine douches; and 3, tamponade of the uterus.

Puerperal Sepsis is discussed in a most thorough manner, and brought up to the present time. In the chapter on the "Physiology of the New Born" the colored-plate illustrating the separation of the cord is excellent.

In the chapter on "Obstetric Surgery" the illustrations of Posture will be of immense advantage to the student, and will explain clearly the points spoken of in the text. More space should be devoted to the use of the modified Champetier de Ribes balloon in the induction of labor. It is especially important to avoid the rupture of the membranes in such cases, and in introducing the bougie the accident happens not infrequently. The illustration of the operation of episiotomy is misleading, as the incision should be made in a line parallel to the long axis of the body, and not obliquely from above downward, as in the illustration. The text is clear on the performance of the operation, but the illustration is incorrect. The chapter on Version is beautifully illustrated, showing in detail the various methods of turning, as well as the extraction of the breech and after-coming head.

The section on "The Forceps" is well written. Solid-bladed forceps are each year becoming more and more popular, and here in New York, at least, we are more familiar with the McLane forceps, and the longer instrument, modified by the late Dr. Tucker, than with the instrument of Hohl, an illustration of which is given.

In conclusion, we believe that Dr. Edgar is entitled to great praise for his painstaking efforts to produce a text-book which not only meets the needs of the student, but which is a veritable encyclopedia of information, and a most valuable reference book for the use of the general practitioners. To both classes of readers we recommend the work as being safe, reliable and, in general, of the highest order of excellence. G. L. B.

BRIEF OF CURRENT LITERATURE.

DISEASES OF CHILDREN.

Prophylaxis of Tuberculosis in Children.—Louis Fischer (*Arch. of Ped.*, July) makes a study of 5,000 cases from the children's service of a large outdoor dispensary of New York City the basis of his paper. These children were brought for the treatment of various infantile disorders. They were examined for the presence or absence of pulmonary lesions with especial reference to tuberculosis. Out of 5,000 cases 4,900 showed no signs of pulmonary disease; 1,700 suffered with adenoids, pharyngeal disease and catarrh of the naso-pharyngeal tract; 59 cases showed distinct evidences of pulmonary tuberculosis; 9 cases of this whole number showed tubercle bacilli in the sputum. Of the 59 cases that showed evidences of pulmonary tuberculosis 43 had tubercular bone or joint disease; 5 had Pott's disease in addition to the pulmonary manifestation. The children ranged from birth to ten years, inclusive.

Of the 59 tubercular cases, 2 were breast fed. Their mothers were very anemic and dyspeptic, and suffered from general malnutrition. Thirty-seven of these cases were bottle fed, the food consisting of grocer's milk. Eighteen cases were fed on condensed milk exclusively; 2 were fed on modified cow's milk.

It is necessary to treat children having mechanical impediments such as adenoids, or enlarged tonsils.

The mortality of infants fed on cow's milk and the relative absence of tuberculosis in breast-fed children is worth noting. The conclusions are that we have two prophylactic measures for infantile tuberculosis: 1. Breast milk; 2. Fresh air.

The serum of breast milk contains an immunizing substance which accounts for the rarity of infectious diseases in the new born.

Fischer said he thought a tubercular mother should not only be isolated from her healthy child, but also from her husband and every one else who was receptive to tuberculosis. As to whether bovine tuberculosis was transmissible to the human being we were not yet prepared to answer.

How to Produce the Best Milk for Artificial Infant Feeding.—Edward F. Brush (*Arch. of Ped.*, July) says that many infants must be nourished artificially. Sometimes the mother is overworked, insufficiently nourished, harassed by a vicious husband and many other children; often incompetent by her own vicious appetite or unfortunate temper, sometimes by inability to secrete milk. The mother must be healthy, love her child, and not nurse it when she is seriously disturbed, either mentally or physically.

That the bovine race is notoriously prone to tuberculosis and other forms of chronic disease is admitted, and the better the breed, from the dairy man's point of view, the more numerous they were afflicted by chronic disease. Therefore, the first and most important consideration in reforming the methods of supplying the milk for infant food begins with the breeding. The cow supplying milk for infants should be bred from rugged animals, not closely related; she should be quiet in disposition and perfectly sound in health; she should be comparatively well nourished; that is, not excessively fat nor emaciated. The wealthy amateur dairyman does as much harm as the careless, poor owner of dairy cows, if not more. Dirt that is not pathogenic is far less injurious than milk from perturbed or nervous cows. The periodical injections of tuberculin must be disturbing. A herd of aristocratic highly-bred Jerseys does well for a butter herd, but is dangerous for the purpose of supplying milk for babies. Good cow's milk will nourish the infant without the intervention of the chemist, while bad milk will kill in spite of the men who know how to modify milk according to the most approved method. The surest test of the milk is the baby itself. The percentages of fat, the proportions of proteids and all the other chemical data amount to nothing. If the baby thrives, the milk is good.

Effect on the Nervous System of Children of Uncorrected Refractive Errors and Muscular Imbalance.—J. H. Clairborne (*Arch. of Ped.*, July) read this paper before the American Medical Association. His conclusions were: 1. Nervous symptoms of a variety of kinds occurred as the result of eye-strain. 2. Eye-strain was due to refraction errors, the imbalance of the external ocular muscular system, or, more frequently, to a combination of the two. 3. Of these two, the refractive errors were by far the most frequent cause. 4. Muscular imbalance alone might cause it. 5. Headache was by far the most common nervous symptom in children caused by eye-strain. 6. The headache was chronic, or induced directly by near work, and was generally in the forehead or temples. 7. Migraine or hemicrania due to eye-strain was comparatively rare in children. 8. Any nervous symptom in children should arouse suspicion of ocular defects, either as a direct or contributing cause. 9. The refractive correction should be made under atropin. 10. Muscular defects were secondary to the refractive, and should be corrected only in certain cases.

Relations of Epilepsy to Amentia.—A. F. Tredgold (*Brit. Jour. Children's Diseases*, July) says the relationship between epilepsy and amentia is of three kinds: 1. Primary amentia in which epilepsy occurs as a mere complication. 2. Idiopathic epilepsy causing amentia. 3. Gross cerebral disease causing epilepsy and amentia. In the first group, primary amentia complicated with epilepsy, 514 cases were examined, and epilepsy was present in 211. The percentage of epileptics is in the feeble-

minged 11 per cent.; in imbeciles 42 per cent.; in idiots 56 per cent. It follows that roughly speaking, 36 per cent. of primary aments are epileptics. Considered in relation to their clinical variety, the percentage of epileptics is: In the simple variety 37 per cent.; in microcephalics 40 per cent.; in Mongolians 13 per cent. The presence of epilepsy renders the prospects of improvement under special educational methods much less hopeful. Probably this is due not so much to the actual convulsive attacks as to the unstable condition of the higher level cortical cells of which their presence is an indication.

Group 2. Idiopathic epilepsy causing amentia.

Showing the Points of Difference between the Three Groups in which Epilepsy and Amentia co-exist.

	GROUP 1. Primary amentia complicated by epilepsy.	GROUP 2. Idiopathic Epilepsy causing amentia (secondary)	GROUP 3. Gross cerebral disease causing epilepsy and amentia (secondary).
Morbid heredity	Pronounced	Less pronounced	Absent.
Condition of patient before the fits	Some degree of amentia or general backwardness usually noticed	Normal	Normal. Onset of fits can generally be traced to some definite morbid process affecting brain.
Nature of fits...	Epileptic. Usually milder and less frequent than Group 2	Epileptic. Severe and frequent	Epileptic. Occasionally epileptiform, rarely constant, rhythmic tremor.
Condition of patient after fits have made their appearance	Degree of amentia often much greater than would be accounted for by the severity and frequency of fits	Amentia usually mild, but much dementia	Considerable amentia may be present with mild and infrequent fits.
Stigmata of degeneracy	Paralysis may be present also if a gross lesion co-exists	No paralysis	Paralysis often present.
	Marked (except in highest grades)	Slight	Absent.
Prospects of improvement under special training	Dependant upon severity and frequency of fits, but on the whole better than in Groups 2 and 3	Practically none	Dependant upon time of occurrence, site, extent, and nature of lesion, and upon severity and frequency of fits. Usually intermediate between Groups 1 and 2.

To this class of cases the term "epileptic" imbecility and idiocy should be restricted. While it may not be possible to enumerate all the factors which are concerned in producing dementia, in the main they are severity and frequency of the convulsive attacks; whereas for the production of amentia a third factor is also requisite, viz.: early onset. In many, although the attacks persist throughout life, there is little effect on the general intelligence of the patient. In others the attacks are severe and frequent, so that the mental development becomes arrested, and though the body develops the mind is no more advanced than that of the imbecile or feeble minded. The proportion of epileptics so affected is not more than about 5 per cent. About 3.5 per cent. of the author's cases of amentia are of this nature.

Group 3. Gross cerebral lesions causing epilepsy and amentia. In this group the epilepsy and amentia are purely secondary, accidental and symptomatic of some underlying brain disease. The pathological processes which produce these lesions may be divided into two classes, vascular and toxic.

In the vascular group the process is either hemorrhage, thrombosis, or embolism, which may be brought about by asphyxia neonatorum, trauma, whooping-cough or one or other of the specific fevers. The final forms seen post-mortem after the lapse of several years are cysts, localised softening or atrophy, areas of sclerosis, porencephaly and chronic meningo-encephalitis. In the toxic group the local process may be part of an infectious disease like scarlet fever, measles, small-pox or typhoid fever; it may be due to the extension of an otitis or rhinitis; or it may be a direct primary infection of the cortical cells (polio-encephalitis acuta of Strumpell). It is probable that many cases of "infantile hemiplegia" are of this nature. The final lesions take the form of localised softening, cysts, sclerosis, meningo-encephalitis, and occasionally hydrocephalus.

Enuresis.—Maurice Ostheimer and I. Valentine Levi (*Arch. of Ped.*, July) present this paper. During five years among 1,657 patients at Children's Dispensary, of University Hospital, Philadelphia, they had met with 90 cases of enuresis. Among these the enuresis was nocturnal in 53, diurnal in 2 and both nocturnal and diurnal in 35. While there was no one cause of enuresis, reduced tone of the vesical sphincter was present in most cases. This was often the result of some antecedent or simultaneous disease. In the majority of cases recovery followed the use of the tincture of belladonna in ascending doses in the mild cases and of atropine and strychnine in the intractable cases. The latter cases were begun with atropine, gr. 1-240th, and strychnine, gr. 1-480th, to one drop of water, and gradually increased until incontinence ceased. The highest dose was continued for from two to four weeks and then gradually decreased, so that the entire treatment covered from six weeks to three or four months. Errors of diet were corrected. Tea, coffee, fresh bread, cake and fried things were forbidden. Nothing was allowed between meals except milk. No liquids were permitted after supper and fluid taken with meals was limited to one or two glasses. Cold sponge baths of two minutes' duration on arising, followed by rubbing the entire body with a Turkish towel. Gastroenteritis, nasopharyngeal catarrh, adenitis, otitis, tonsillitis, worms, etc., were given special attention. If analysis of the urine showed hyperacidity, potassium citrate was given. In boys the foreskin was stripped back early and adhesions freed, when possible; otherwise circumcision was advised. In every case in which the presence of a vesical calculus was suspected, skiagraphs were made or sounds introduced. No calculus was discovered among the 90 cases.

Chronic Constipation in the Infant.—J. Ross Snyder (*Arch. of Ped.*, July) says that complete digestion embraces conversion, absorption and evacuation. The successful performance of these is dependent on each other, on the character of the food ingested, and on certain secretions and motions of the organs involved. In the infant the intestinal canal is relatively longer than in the adult. It contains a larger number of loops and coils; the peristaltic movements are slight because the muscular structure is undeveloped; the walls generally are weaker and thinner. These differences all predispose to constipation. Because many constipated mothers have constipated babies some regard this as another expression of hereditary influence. Constipation in the mother, or its causes, will produce just the changes in her milk that render it constipating of itself. So far as the infant is concerned the real causes of constipation are to be found only in errors of hygiene or of the diet. Overcrowding, lack of sunshine, lack of fresh air may so interfere with the digestive process and with the normal development of the child that irreparable injuries are produced. Treatment: If the disorder results from unhygienic conditions castoria, castor-oil or nux vomica will not better the conditions. If the diet is too rich in proteids, giving salts, suppositories or enemas will not lessen the proteids. A knowledge of the relationship between the feces and the ingesta is pre-requisite. The cause, when found, suggests its own correction, and no routine treatment should be followed. If the constipation is not of very long standing, atony of the bowel may be overcome by correcting the diet and by endeavoring to establish a habit. The insertion of an ordinary clinical thermometer, well vaselined, while the child is in posture, often proves successful. Soap and glycerine suppositories are to be avoided if possible. Massage should never be practised on the young.

Congenital Occlusion of the Lachrymal Canal, and Acute Contagious Inflammation of the Conjunctiva Occurring in Children.—John E. Weeks (*Pediatrics*, July) says that congenital occlusion of the lachrymal canal is often mistaken for acute conjunctivitis. The acute contagious ophthalmias to which children are subject are those that develop as a consequence of infection by the pneumococcus, the Koch-Weeks bacillus, the gonococcus and the Klebs-Löffler bacillus. As a result of infection by the first two microorganisms there is a mucopurulent conjunctivitis. A pneumococcus conjunctivitis is indistinguishable, clinically, from a Koch-Weeks bacillus conjunctivitis. Acute mucopurulent conjunctivitis due to the pneumococcus or to the small bacillus is devoid of danger to vision, except in an extremely small percentage of cases, while gonorrhea and diphtheria may cause great damage to vision in a large percentage of cases. For this reason the diagnosis is important, and if any uncertainty exists a microscopical examination of the secretion should be made.

THE AMERICAN
JOURNAL OF OBSTETRICS
AND
DISEASES OF WOMEN AND CHILDREN.

VOL. L.

DECEMBER, 1904.

No. 6.

ORIGINAL COMMUNICATIONS.

**THE LIMITATIONS OF OPERATIVE INTERVENTION IN
CANCER OF THE CERVIX UTERI.**

BY

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THERE is no question in medicine of more importance to-day than cancer. Tuberculosis for a while shared this interest, but bids fair soon to be within our power to control. Then again, we know the cause of tuberculosis and, knowing its cause, we know how it can be prevented and even have hopes of its ultimate eradication. But as to cancer, we are yet groping in the dark. No better expression of our helplessness in this respect has been given than by Dr. Herbert Snow, Senior Surgeon of the London Cancer Hospital, in a recent address before the directors of that institution. He said that he and his associates had studied this disease as, to the best of his knowledge, it had been studied nowhere else in the world. They had attacked its problems with the microscope in one hand and the scalpel or the stethoscope in the other. They had labored by every means in their power to substitute for the mass of chaotic confusion and traditional fallacy which had hitherto prevailed a genuine cancer science, as a sure foundation for future research. And in this attempt they had failed—utterly and miserably failed. He was

inclined to think that there had been too great reliance upon bacteriologic and laboratory ways, and too little upon clinical and physiologic observations.

When this is the deliberate judgment of a man well qualified by exceptional opportunities for correct judgment, we are justified in saying that the outlook from a pathologic point of view has nothing encouraging to offer, especially as his conclusions are substantially the same as those of the Harvard Cancer Commission, whose results as to the etiology of cancer, after two years of careful research, were absolutely negative.

Since, then, there is no aid in sight from the pathologic side, there only remains for us to try to better our results from a clinical standpoint. Here the outlook is not quite so discouraging. Our results, both as to prolongation of life and as to radical removal of the disease, are undoubtedly improving, especially in some types of cancer. It is the purpose of this paper to try to ascertain what has been done from a clinical standpoint for one variety of this disease—cancer of the cervix uteri. The nature of the subject precludes the presentation of anything novel, but it is often of advantage in any debatable question to ask ourselves what is the collective thought and deliberate judgment of the men best qualified to judge and think. This taking of stock, as it were, may help us to know just where we stand, and may enable us to formulate some definite conclusions and to lay down some rules for our guidance in the matter of attacking this malady.

The first question to be decided is: Shall we operate at all in cancer of the cervix? Opinion is divided. Most of the English and continental operators are in favor of operation, while the tendency of American opinion is more pessimistic and is inclined toward the conclusion that in cancer of the cervix, as it usually comes under the notice of the surgeon, operation is useless. On the one hand, we have Mackenrodt¹ claiming 48.2 per cent. of lasting cures in a material showing an operable ratio of 92.9 per cent., and Schuchardt, in a material showing 62 per cent. of operable cases, a definite cure in 24.5 per cent. On the other side we have Baldy, who states that all of his cases of cancer of the cervix are dead, and McMonigal of San Francisco, with a record of 481 hysterectomies for this disease, with 479 deaths from the primary operation or from recurrence. How is it possible to reconcile this amazing difference of opinion and results? Are the German operators so much more skilful in this line of work than the American, or is their technique so vastly superior to ours that they

get results so far surpassing ours? Or is there a third explanation. The difference seems to me to be explicable on two grounds. In the first place, German operators do not draw a sharp distinction between cancer of the cervix and cancer of the body of the uterus, and in the second place there is a different understanding of what is meant by a cure in this disease. Cancer of the body, as we all know, is a much less malignant type of the disease, and one giving a much higher percentage of cure after operation. In estimating the mortality from the different types of uterine cancer, however, it should be considered separately from cancer of the cervix. In the second place, it must be remembered that most of the German surgeons adhere to the dictum of Volkmann that two years' freedom from recurrence usually means a permanent cure in this disease, and three years' freedom a certain one. American surgeons are convinced that this hard-and-fast drawing of the line at two years, three years or any number of years is entirely arbitrary, and that it is not justified by the after histories of these cases. Did I wish to do so, I might quote pages of statistics to show that recurrences are not uncommon after five or six years of apparent freedom from the disease, and Labhardt cites cases of recurrence in the operation scars after from fourteen to twenty years. I am quite sure that, if American surgeons should adopt the three-year limit and should include in their statistics cases of cancer of the body of the uterus, they could present results fully as flattering as those of the German surgeons.

There is among surgeons yet a third party, whose motto is "radical operation." Representative men in this party are Wertheim in Germany and Ries and Sampson in America. Encouraged by the results of the radical operation in cancer of the breast and elsewhere, these men say that no operation for cancer of the cervix should be considered complete unless it shall include a thorough removal of all suspicious pelvic tissue and lymph-nodes, and that such an operation offers a chance of permanent relief in a certain small proportion of cases. This operation is of too recent development to have any statistics by which to compare it with rival operations. Its claims are vigorously opposed by Baldy, who says that it is impossible to remove all diseased tissue, and that if all cannot be removed it is just as well not to remove any. Sinclair², in his address in obstetrics before the British Medical Association, also pays his respects to this operation in a very vigorous way. He says that a large number of the extended, radical abdominal hysterectomies for cancer are murderous vivisections.

which nothing hitherto advanced in their support appears to palliate, much less to justify. The immediate mortality, he says, is terrific and the procedure unjustifiable, as the experience of its remoter results shows that the patients who escape with their lives from the operation are no better off in relation to recurrence than those who have undergone less severe operations.

It seems to the writer that this criticism is too harsh, and that it is manifestly unjust to a body of conscientious men who have added greatly to our knowledge of the dissemination of this disease.

From this rapid survey of the present opinion of the profession as to the propriety of operation in cancer of the cervix, it may be seen that the surgeon can get competent endorsement for any stand he may choose to take in this matter. My own opinion is that the so-called "radical operation" offers the best chance for these cases and that, so far from being what Sinclair calls "murderous vivisection," it is in reality the best attempt yet made toward a solution of this difficult problem. The best that can be said, after all, is that we are not altogether without hope.

English operators are strongly in favor of vaginal hysterectomy, and their position is sustained by a fair proportion of French and German surgeons and by a small minority of American operators. Vaginal hysterectomy for cancer of the cervix uteri is undoubtedly a tempting operation. It is the easiest and quickest of all the operations for this disease, and the one presenting the least primary mortality. Unfortunately, the remote results are far from satisfactory. Making every allowance for the claims of its most ardent advocates, the melancholy fact stares us in the face that a study of the most reliable statistics shows that practically all those subjected to this operation are dead at the end of five years. In a discussion of this subject before the New York Academy of Medicine in 1900, the debate was participated in by such men as Pryor, Boldt, Janvrin, Meyer, Gill and Dudley. None of the speakers was in favor of the vaginal operation; some spoke favorably of the radical operation, while others condemned all operative measures as being useless, so far as any hope of curing the disease was concerned.

In a recent paper upon this subject, Kelly,⁸ of Baltimore, says that, in his opinion, "cancer of the cervix usually extends by direct involvement of the contiguous tissue. Extension by glandular metastases, *per saltum*, is unusual in the earlier, operable stages of the disease." Acting on this assumption, he advocates

a vaginal operation, in which, by quadrisecting the uterus, he claims to secure a fairly wide removal of suspicious tissue. The objections to this procedure, it seems to me, are two-fold. In the first place, if cancer of the cervix extends by contiguity mainly, it is different from cancer anywhere else. In the second place, his conclusions are directly contradicted by the patient and thorough work of Emil Ries, of Chicago. This observer⁴ has shown conclusively that there are early glandular metastases, and that they have been overlooked hitherto because of insufficient examination. He insists on the careful examination of serial sections. In one of his cases he examined over seven hundred sections before finding cancer. Enlarged glands, he says, may not contain cancer cells, while apparently normal glands may be full of them. The size of the cancer in the cervix is in no regular proportion to the size of the affected glands, and neither the number nor the size of the involved glands can be predicted from the size of the cancer in the cervix. He also says, which is important in view of Kelly's statement, that the invasion does not proceed from gland to gland, consecutively, but that the malignant invasion may leap over some of the glandular links and lodge in glands well beyond the primary seat of the disease. This work, based as it is on the personal examination of over twenty thousand sections, appears to dispose effectually of Kelly's contention.

Roger Williams found glandular involvement in fifty-six out of seventy-eight autopsies on these cases. Wertheim found the glands affected in thirty out of ninety cases, and Peisser⁵ in more than 50 per cent. of the cases of cancer of the cervix he has examined. This involvement, he says, occurs early, while the disease is yet operable and the ligaments supposed to be free from disease. Irish,⁶ in a series of twenty-five abdominal hysterectomies for cancer of the cervix, found extension of the infection outward toward the pelvic wall in four cases. In none of these cases could the extension have been detected by vaginal examination. It thus appears that the operation of Kelly is based upon unsound pathologic data, and that it offers no special advantages over a simple vaginal hysterectomy. Together with all other vaginal operations, it should be considered as in no way a curative procedure in this disease.

It must be apparent from this casual survey of a subject, the literature of which is immense, that the outlook is dark indeed. The darkness is illumined only by the few rays of light which come from the radical abdominal operation, with wide removal of the

parametrium and glands, as well as the upper part of the vagina. No progress is to be made along any other lines, so far as we can see at present. I believe that the involvement of the vaginal tissue in this disease has not received the attention which its importance demands. Many recurrences take place in the vaginal scar, and I believe that the next improvement in our technique will be in the direction of a wider removal of this tissue, or even the extirpation of the entire lining membrane of this canal as advocated and practised by Martin.

I have purposely refrained from quoting many statistics. They are ordinarily so completely unreliable as to be worthless. So much depends upon the personal equation of the reporter that comparisons are impossible. One surgeon will operate only on selected cases; another will base his reports upon a clinical diagnosis only, while yet another will give only the operative and not the remote results of his cases. One will get more reliable conclusions from the study of a small series of cases from a known source. Sampson⁷ reports the Johns Hopkins cases up to December, 1902. In this hospital the removed tissue is carefully examined, and in the second place, every effort is made to follow up the cases with a view to securing trustworthy information as to the ultimate results of operation. Sampson says: "Of 143 patients in which hysterectomy has been done, 21 cases have died as a result of the operation, giving a primary mortality of 14.6 per cent. Three years or more have elapsed since the operation in 69 cases which we have been able to follow, and at the end of that time 20 were living, but six of these later had recurrences, thus giving a percentage of recurrences after three years and more of 79.7 per cent. When we consider those cases in which five years or longer have elapsed since operation, we find that there have been 49 whom we have been able to follow, and of this number the growth returned in 43, or 87.7 per cent. We realize, however, that five years is not long enough, for two of our patients have died at the end of six and seven years from general carcinosis, without a return in the vaginal vault, and a third is living with a small growth in the vaginal scar, five and a half years after operation, there having been symptoms referable to it for only two months."

This is not a very flattering showing, but it is, what cannot be said of some other statistical reports, an honest one, and fairly represents what we have to expect from the usual operations for this disease.

While the operative outlook is not promising, this does not

mean that we are to fold our hands and let these patients die without any attempt to relieve them. Much may be done to render their lot more happy and their remaining existence more comfortable. At the head of the list of remedies for the palliation of this disease I should place the actual cautery. It is wonderful what relief may be obtained from the judicious use of this agent. Erosion may be checked, hemorrhage stopped, pain relieved and life prolonged by the use of the cautery, repeated from time to time if necessary. The cautery operations of Byrne give results fully as good as those obtained from vaginal hysterectomy. The progress of the disease seems to be checked, for a time at least.

The use of zinc chloride, calcium carbide and other chemical caustics is in the same category with the actual cautery. The great objection to their use is the uncertainty of their action, or rather the difficulty of limiting their action. While with the cautery the precise amount of tissue destroyed may be gauged to a certainty, caustics may spread more widely than is desirable and do harm to important structures. Atmocautis by the use of steam or hot water meets with favor in many European clinics. A two-per-cent. solution of methyl blue, applied on tampons after a thorough curetting, is advocated by Cucca and Ungaro.⁸ They claim that by its use patients were kept comfortable and free from hemorrhage and discharge for months, or even years. Pain was relieved so that morphine could be dispensed with, and the progress of the disease was evidently retarded. In the cauliflower form of cancer the injection of absolute alcohol into the mass will cause the cancerous tissue to slough, leaving a granulating surface. The curette, however, is quicker and more satisfactory, although its use causes more hemorrhage.

A few months ago, in speaking on this subject before the society I advanced, in a tentative way, the opinion that vaginal hysterectomy was justifiable in some of these cases for the relief of hemorrhage and discharge, and with no idea of a radical cure. This met with some opposition. In a recent article Krusen⁹ makes the definite statement that vaginal hysterectomy is indicated in cancer of the cervix for the relief of hemorrhage, and fortifies his opinion by that of Olshausen to the same effect. Krusen states that, aside from the relief of hemorrhage, there are two other advantages gained, as the recurrence is generally behind the vagina and only ulcerates through toward the end of the malady. Also, when the recurrence does take place it does not bleed as much as does the original growth. With such confirmation of the

opinion then expressed, I again put forth the plea for vaginal hysterectomy as a purely palliative measure in these cases.

Dorland¹⁰ states that oöphorectomy and the subsequent administration of thyroid extract will decidedly ameliorate two of the principal symptoms of cancer of the cervix—pain and discharge—especially in younger women.

The work of Dawbarn in retarding the progress of malignant disease by the ligation and removal of the arteries supplying the affected part would seem to indicate that this measure might be of value in cancer of the cervix. So far as I know, Pryor is the only operator who has made a practical application of this principle. As one of the steps of his operation he ties the internal iliac, ovarian and obturator artery on each side. Krönig¹¹ advocates the ligation of the hypogastric and ovarian arteries on both sides, in inoperable uterine cancer, claiming that it checks discharge and retards growth. It seems reasonable to suppose that the shutting off of the blood supply for a time might cause the death of whatever cancer cells might be left in the tissues after operation. At all events, the measure impresses me as one of great value in dealing with these cases.

I can see no good reason for withholding opium in these cases. I have had no experience with the method of its administration recently advocated by Carr, in his remarks before this society, but his reputation as a careful observer is such that I shall certainly try it in the next case which presents. If we have in opium a remedy which will check hemorrhage, improve nutrition and relieve pain, it would be heartless not to use it.

From my study of this subject, I have formulated the following rules for my own guidance. Any case presenting pain, hemorrhage and foul discharge, with marked erosion or fungus growth will be considered inoperable. If any member of this society desires to operate on these cases I will cheerfully refer to him all such coming under my notice. I have had all the experience with them that I desire. Palliative measures will satisfy me in the future. If I am ever fortunate enough to see a case of cancer of the cervix in its very earliest stage, or where there is even a well-founded suspicion of its existence, something which has not happened to me as yet, I shall recommend a radical removal of the uterus, upper part of the vagina and as much of the pelvic tissue, including glands, as can be safely removed, and shall combine with this the ligation of the arteries as advocated by Pryor. Despite its higher primary mortality, which, by the way, is constantly growing small-

er, this course seems to me to be the only safe one and the only one giving any promise whatever of cure. Vaginal hysterectomy will be considered as a purely palliative measure only.

Nearly every writer on this subject emphasizes the importance of early diagnosis, but few of them lay down any rules for making such diagnosis. Experience has taught us that pain and hemorrhage are late symptoms and that they usually imply well-marked erosion or an advanced fungous growth. What we need is some guide for detecting cancer of the cervix before erosion occurs. There is no question as to the utility of preventive measures. One of the indisputable facts in connection with this disease is that it occurs more frequently in women who have borne children. Time was when every laceration of the cervix called for an operation for its repair and the change in gynecologic opinion in this respect has not been for the better, from the standpoint of cancer. As a measure of prophylaxis in this disease, all lesions of the parturient tract should be carefully repaired. Even if it be unnecessary in nine cases out of ten, if we can thereby save the tenth from the development of cancer of the cervix it is enough to justify the operation.

Any irregular hemorrhage, at or after the menopause, or any ulceration about the cervix should raise the suspicion of cancer and call for careful examination of the uterus. In this connection, Krusen¹² gives the following points as aids in diagnosis, although all may not be applicable to every case. (1) Unusual friability and vascularity of the tissue, which, if not detected by the finger, may easily be made apparent by hooking a tenaculum into the suspected area. (2) A close adhesion of the mucous membrane of the portio to the parenchyma. (3) Difficulty of cervical dilatation as evidenced by the introduction of a tent. In a cancerous process there is, as a rule, a continuance of the hardness after dilatation. (4) Bleeding is easily provoked by an examination or by an unusual exertion or manipulation. (5) The characteristic hardness of the cervix is almost imperceptible at first, but increases as the disease progresses. (6) Puncture of any suspicious nodules or follicles will differentiate carcinoma from cystic follicles or diseased glands. (7) Ulcerated or eroded areas which are not speedily amenable to treatment should be regarded with suspicion. (8) Any enlargement of the uterus, occurring after the menopause, is usually due to malignant disease. (9) The value of an excised wedge of tissue or of scrapings. This will depend upon the competency of the pathologist.

I would add to this list the occurrence of an acrid watery discharge, or of a brownish vaginal discharge as a pre-hemorrhagic symptom in some cases.

Heitzmann¹³ again calls attention to an aid to diagnosis, which he published twenty years ago. He says that if a pledget of cotton, soaked in a twenty-per-cent. solution of copper sulphate, be applied for a minute or two to a suspicious erosion on the portio vaginalis, the surface will become quite blanched if it is a mere ectropion; if it is a simple erosion, a thin, bluish-white coating will form, without hemorrhage. By repeating the application at intervals of three or four days the erosion will be healed at the end of two weeks. In the case of a cancerous ulcer, on the contrary the copper sulphate will cause a smart hemorrhage. If upon a second application a few days later, the ulcer bleeds worse than before, the diagnosis of cancer is practically certain.

After all is said and done, however, experience with these cases almost drives one to the belief that the accepted dicta as to cancer are wrong and that, instead of being a local disease at the start, the first apparent manifestation is an accident; the local expression of a pre-existing general systemic infection. With the most scrupulous care and the most conscientious dissection there will be recurrences at the site of operation or secondary growths elsewhere which tempt us to the consoling thought that a general disease must have antedated the appearance of the local lesion.

The following conclusions may be drawn:

1. The present status of operative intervention in cancer of the cervix uteri is that operation is practically useless in cases as they usually come under the notice of the surgeon.
2. In the operable cases the only procedure offering any reasonable prospect of a permanent cure is the so-called "radical operation" by the abdominal route.
3. Vaginal hysterectomy is useless as a radical operation, but has a place as a palliative measure.
4. The upper part of the vagina is deserving of more attention, from the standpoint of recurrence, than it has heretofore received.
5. The most promising outlook for these cases lies in early diagnosis, combined with thorough and complete operative measures.
6. The starvation of the disease by cutting off its blood supply is a palliative measure worthy of trial and a valuable addition to our operative technique.

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ECTROMELUS.¹

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(With three illustrations.)

THE individual whose case I report to you to-night is a boy of now about eleven weeks (born July 10, 1904), healthy, well-nourished and perfectly developed, except for his extremities. The arms end at the elbows. The shoulder girdle and the humeri seem, both by palpation and the X-ray picture, to be intact even to the condyles of the latter bones. Each arm ends in a conical stump terminated by a little cicatricial depression, as if the lower segment of the limb had been artificially amputated. The infant possesses full powers of motion for the stumps remaining. Indeed, so lively was he that it was difficult to get his photograph or radiograph. There seem to be no traces of lower limbs, except the buttocks and the very short fleshy stumps at the hips. One cannot feel any bone in these stumps, but a faint trace of the head of each femur is shown by the X-ray. The child has motion of these stumps upon the pelvis, which gives also the impression that there exists a very short bone in them.

As is rather unusual in bisabdominal amelus, the genitals are

¹Read before the Chicago Gynecological Society, Sept. 23, 1904.

perfectly developed. No other anomaly is discoverable. As can be seen from the illustration, the boy is finely developed and well nourished in the whole extent of his body except the limbs. If one covers the picture just below the level of the nipples so that the ends of the stumps of the arms are just concealed he gets the portrait of a very pretty baby.

The individual is to be classed on account of his arms with the hemimeli, and on account of his lower limbs with the ameli. Therefore, the exact scientific name would be Hemimelus Amelus. To specify further, we might designate the case as Hemimelus



Hemimelus Amelus.
(Hemibrachius Opus) Author's case.

Thoracicus et Amelus Pelvicus. This condition is one of the divisions of the order ectromelus. The condition is rare. As hereinafter mentioned, I have found records of only three other similar cases in the literature.

The labor was conducted by a midwife of exceptional intelligence, Mrs. Seehuus, who informs me that the child presented by the vertex and was delivered without any complication, and within a few hours after the commencement of the pains. With the shoulders there was a slight delay, which required manual

assistance. The child weighed eight pounds at birth. The amniotic fluid was very scanty, and the membranes were thick and tough.

In St. Hilaire's scheme of classification of anomalies and mon-



Radiograph of author's case.

The shadows extending out from the lower portion of the figure represent the index fingers of an assistant holding the baby down. At XX appear to be rudiments of the heads of the femora.

sters those individuals whose malformation consists in deficiency of limbs are placed in the class of hemiterata, or half-monsters. He distinguishes the symelians, characterized by fusion of the lower extremities, often with malformation of the pelvis, and the ectromelians, characterized by deficiency in whole or in part of one or all of the extremities. This order of ectromelus is divided into three genera: phocomelus, hemimelus and ectromelus proper, better called amelus.

In the form known as phocomelus the limb exists with all its divisions represented, but each segment is rudimentary. In the upper limb, for instance, there will be a very short humerus, radius, ulna, carpus and hand. Usually each bone of the arm will be malformed, and may be represented by only the merest rudiments; but dissection or the X-ray will show some traces. The hand or foot is probably never actually articulated directly with the trunk without the intervention of some rudiments of long bones. In a number of aquatic animals, such as the cetaceans and



Agnathus Hemimelus Amelus.

seals, not to speak of fishes, the humerus and forearm bones, as well as the femur and leg bones, approach to rudimentary proportions, so that the hands and feet appear as if attached directly to the trunk. Resembling such conditions are the monsters of the type of phocomelus. The name is derived from Greek words meaning seal and limb. Sometimes the term micromelus is used to designate this condition. The influence of heredity and breeding in the production of phocomelus among domestic animals is seen in the familiar instance of the English basset hound and the German dachshund. In the most fashionable individuals of these

breeds the limbs are not only greatly shortened, but the bones are deformed by excessive bowing. They are indeed true phocomeli. Several years ago a horse was to be seen in the streets of Chicago whose legs were so short that the animal stood only about three feet high, although its body was of normal proportions proper to one weighing a thousand pounds and standing fifteen hands.

In the form known as hemimelus the hand or foot, and usually much or all of the leg or forearm, is absent, leaving the thigh or arm like the stump of an amputation. Indeed, this stump often ends conically, as if amputated, and often has a cicatricial formation at the tip. The cases of this kind are sometimes known as intra-uterine or congenital amputations. In other instances the stump terminates in a knob, frequently surmounted by one or more fibrous and cutaneous tubercles representing the digits.

In the form known as amelus the individual lacks one or more limbs, which are entirely absent even as to traces of bones, or may be represented by a knob with or without a minute bony core.

A subsidiary variety is the ectrodactylus, which lacks the complete number of fingers and toes.

All these different forms may affect one, two, three or four limbs. Symmetry as to the two sides is a very common factor. Combinations of the different forms may coexist in the same individual. Thus, one limb may be affected with phocomelus and another with hemimelus or amelus. It is more likely, however, that if all four are affected the thoracic extremities will exhibit one kind of malformation and the pelvic extremities another. The symmetry as to sides is usually maintained. While it sometimes happens that other anomalies of the body are present in addition to those of the limbs, yet it is usually the case that the trunk, even in complete amelus, is well developed. The individuals, indeed, are commonly more than usually well developed and well nourished. There is nothing inherent in the ectromelian monster which prevents it from being born alive and continuing to carry on an independent existence after birth provided that nourishment is furnished it. Many are recorded who have reached adult life. Some become marvelously expert in using the rudiments of limbs which they possess. Thoracic ameli learn to write, draw, paint, sew and do a number of other difficult things with their feet. Pelvic ameli learn to get about very cleverly with the aid of the hands and buttocks. Hemimeli can accomplish truly marvelous things by the aid of mechanical appliances attached to

their stumps, or even with the stumps themselves. Phocomeli become adepts with their seal-like flippers. It is only the complete amelus who has to depend upon others entirely, or almost entirely, for satisfying his vital needs.

Huet and Infroit describe an adult man with thoracic phocomelus who possessed only two rudimentary digits on the right hand and one on the left who could yet write and even draw well. Each forearm had only one bone, and the carpi had only one bone each. Brandt records a case of complete amelus, born otherwise well-developed and well-nourished, who died in a few weeks because of starvation, its mother refusing to nurse it. Dumeril, in 1800, dissected the body of a man aged sixty-two years who had phocomelus of all four limbs. The individual has been able to stand, and even to walk, although the femora were represented by only the heads and trochanters, the tibiae ill developed and unattached to the femora, the lower limbs being composed mainly of feet. This man had no masseter muscles, but was otherwise normal except for his limbs. He was said to be very bright intellectually and to have been able to speak and write four languages. I remember seeing in my boyhood here in Chicago—doubtless some of the older of my hearers will also remember—an adult man engaged in the clothing business who wore an artificial arm on the right side and had a small phocomelic member attached to the left shoulder. This left upper extremity was only about 6 or 7 inches in total length, had two or three webbed fingers and was otherwise somewhat deformed, but served its owner well for holding light objects, for writing and many other purposes. I never saw the right thoracic member, but have heard that it was represented by only a very rudimentary limb, of which he was able to make no use. It was said that the right upper extremity was entirely absent, but this is highly improbable. Phocomelus of a single limb is stated by St. Hilaire never to have been recorded. At least one case has been reported since his time (Guirard). The individual here mentioned by me married and had a son who was affected in a similar manner. The boy is now, I understand, about fourteen years old.

Ectromelus of moderate degree is not very rare among animals or among men, especially when we include ectrodactylus in the same class. Excluding ectrodactylus, I have been able to collect from the literature records of 209 cases. While this is the result of an exhaustive search throughout all the literature from the earliest times until to-day, yet I consider it incomplete to the

extent of about 10 or 15 per cent. I have accidentally come across some cases under captions which give no indication of their characters, and I have been unwilling and unable to look up every case entitled "A Wonderful Monstrosity," "A Unique Case," "An Interesting Anomaly," "The Strangest Case on Record," etc. Under such titles, doubtless, some ectromeli are recorded; indeed, I have traced several. Of the different genera of the order of ectromelians, amelus stands first in frequency with a total of 98 recorded cases. Of course, here are included all cases of total lack of limb; one, two, three, or all four. Complete amelus or lack of all four extremities is recorded 22 times. There are 54 cases of hemimelus. Phocomelus is recorded 57 times. Some of these cases were mixed, but I have classed them according to the most prominent anomaly.

Symmetry is the rule in these forms of anomaly. If one arm, for instance, is affected with phocomelus or amelus, it is likely that the fellow is similarly affected. It is rare to have the arm and leg of one side deformed while the opposite members are normal. Hemimelus is more apt to affect a single member than are the other forms. In some cases, besides the anomalies of the limbs there are other malformations, such as hare-lip, rachischisis or eventration, but the proportion of such additional anomalies is less in this class of monsters than in most others. The majority have no other anomaly except those of the extremities. As before mentioned, the rest of the body of the individual is usually well-developed and vigorous. Hemimelus, perhaps because it is often caused by the action of amniotic bands and adhesions, is more likely than the other types to be attended with deformities of other parts of the body.

The bithoracic form of amelus is the most common variety of that type. The unithoracic is much rarer than the bithoracic, especially in man. Least common of all ameli are the bisabdominal cases; that is, those lacking the lower limbs. In man only very few cases are recorded. St. Hilaire says that the uni-abdominal amelus alone is hardly known to exist¹ except in monsters affected also with eventration, and therefore not belonging strictly to the class of ectromelians. Cases where the absence of one thoracic member coincides with that of one abdominal member or of both, and where the absence of one abdominal member coincides with that of two thoracic members, have only very rarely been observed in man. On the contrary, the absence of all four

¹Mestre, of Havana, reports, however, such a case. *q. v.*

limbs is less infrequently seen (St. H.). There are three types of amelus: where the stumps end in one or more rudimentary digits; where there are no vestiges of digits, and where there is lack of even a stump. These rudimentary digits are usually no more than skin tubercles without any bone.

The etiology of the ectromelian monsters is very obscure. The trite explanation of atavism could at best apply only to the cases of phocomelus, and such an explanation is merely one of words. Heredity seems to play a part in a considerable number of instances. Especially often in the lesser degrees of deformity, such as those of ectrodactylus, do we encounter a history of several cases in a family. Walker, in the *Johns Hopkins Bulletin*, gives the genealogical table of a case of malformation of the hand, consisting of the absence of one or more bones of the little and ring fingers and the absence of certain joints between the phalanges. This anomaly, with unimportant modifications, had existed in some member of the family for five generations. Durlacher writes of similar defects, consisting of the absence of several fingers occurring in a boy, his mother and sister. Meurer reports ectrodactylus in a woman who had a child similarly affected. In her family there had been ten cases of like anomalies. He is inclined to think that most cases of abnormality of the limbs are due to hereditary influence, and only exceptionally to mechanical causes. The case of phocomelus which I have already mentioned as occurring in Chicago, and whose son was affected with a similar malformation, may have been merely an instance of coincidence.

Zeigler considers that defects in the extremities may be due to a deficiency in the primary differentiation of the embryo, may be secondary to some disturbances in the development of the limb or bones, or may result from constrictions by bands of membranes or loops of the cord. The cause of defective development of the limbs may be sometimes referred to a precedent malformation of that part of the central nervous system supplying the affected limbs. In connection with the last statement it may be well to consider Gowers' report on the examination of the brain of a man who had congenital absence of one hand. The subject was a man, aged forty years, who had died of general paralysis. The left hand had been absent from birth. The bones and muscles of the forearm were normal, but the limb ended in a rudimentary carpus consisting of two pieces of bone bound together by ligaments to which the muscles of the forearm, which normally extend into the hand and to the fingers, were attached. The

nerves and veins of the forearm were normal and the arteries nearly so. The two cerebral hemispheres were nearly of the same size. The convolutions were not abnormal or different on the two sides, except as to the ascending parietal convolutions. At the origin of these at the longitudinal fissure, for the first inch of their extent, they were nearly equal in size and continued nearly equal for the upper inch and a half. In the middle two inches there was a marked difference in the two sides, the right being a narrow single convolution while the left was broad and depressed by a slight secondary sulcus. The central ganglia were equal in size. The microscope showed little difference in the structure on the two sides. The atrophied portion in this case was just the portion which Ferrier had found by experiments upon monkeys to be the seat of motion of the opposite hand. In old amputations such atrophy has been occasionally noted, but much slighter than in this congenital case. The question arises whether the deficiency in the brain occurred first or was secondary to the faulty development of the hand.

Just as in the production of most of the single monsters, so in the causation of ectromelus it seems probable that, in the majority of cases, disease of the amnion is a potent factor. In the second week the embryo is covered by the amnion which lies relatively quite close to it. Disturbances in the nutrition of the amnion or in the circulation of the chorion may cause the former membrane, like the peritoneum, to adhere to projecting portions of the embryo, especially at the margins of the normal clefts and to the organs and structures temporarily protruding therefrom. Thus we account for most of the malformations resulting from failure of closure of clefts or delayed closure. In this way arise cranio-rhachischisis, eventration, harelip, extrophy of the bladder and the like. Very soon after the amnion has entirely closed over the embryo the limb buds appear jutting out from the surface of the embryo. A narrowed amnion may press upon the ends of these growing buds or become adherent thereto and destroy a few of the terminal cells. The loss of a very few cells at that early time means perhaps the failure of half the limb to develop or even all of it. The very symmetry as to the two sides speaks for the probability of this view. The amnion is too small, and therefore encroaches upon the growth of the projecting limb buds. If the membrane becomes adherent to the ends of these buds it destroys some cells at the end which would have developed into the terminal sections of the limb and amelus or hemimelus results. If it does

not become adherent but merely presses upon the whole limb bud it may not destroy any terminal cells but cause deficient development of the whole limb and result in the formation of phocomelus. The baneful action of the diseased amnion may not last very long and the condition may be quickly recovered from on account of the regenerative powers of the embryonic cells, but the damage to the limb buds may have already been done. On the other hand, evidences of disease of the amnion may persist even to the end of pregnancy. Oligohydramnios is frequently reported in cases of single monsters. The time when the evil action of the amnion begins to act has much to do with the extent of the anomaly. Since the arm buds begin a little before those of the legs the pressure or influence of the amnion may first be exerted upon them. The leg buds, growing out a little later, may find conditions changed for the better and so escape deformity or so much deformity. On the other hand, the amniotic influence may be exerted a little later when the leg buds are in condition to receive the brunt, while the arm buds have developed far enough to be able to resist. Again, the different poles of the ovum may be affected to different degrees by the inflammation or other disorder so that there may be a greater tendency for the amnion at one or the other end of the embryo to adhere thereto. Thus, our own case may have been caused by pressure of the enclosing amnion and adhesions thereof at a period when the arm buds had advanced just a trifle beyond those of the legs. Therefore, perhaps that is why we have hemimelus of the thoracic limbs in our case and complete amelus of the abdominal limbs. The end cells were destroyed on the arm buds so that the structures below the elbow ceased to develop, leaving the upper arm intact while the end cells on the leg buds represented a more considerable part of the lower limbs, and, when they ceased to develop, left no limb at all except the buttocks. Beside mine, I find records of only three like cases.

We must also admit that spontaneous amputations of the limbs may occur in utero. Amniotic bands or even loops of the cord may encircle the limb at an early period and actually cut off the circulation therein, so that the distal portion atrophies, dies, becomes macerated and disappears before the end of pregnancy. In one instance the amputated member has been found floating in the amniotic fluid (Martin). In at least one instance an incomplete amputation has been found at the birth with the bone alone unsevered and the guilty amniotic band encircling the limb

at the point of constriction (C. Bleck). Winckel also reports that he observed a band encircling the arm of a fetus, having almost severed it. These were cases where the amniotic bands were "caught in the act." The amputating action of amniotic bands and cords is exerted at a relatively late period in embryonic life. Probably most of the cases of amelus and hemimelus, involving only one side or one limb or otherwise asymmetrical, have such a causation.

Blancard, writing of the rôle of the amnion in the production of abnormalities, states that the amnion may act by compression, by adhesions and by constricting bands. Adhesions are preceded by rubbing; inflammation follows and cicatrization. Traction may also be exerted by membranous bands and deformity thereby be added to destruction of cells. Bands may also act by strangulation or by sectionizing.

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STREPTOCOCCI IN AIR OF HOSPITAL OPERATING ROOMS AND WARDS DURING AN EPIDEMIC OF TONSILLITIS.¹

BY

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THAT gynecologists and general surgeons have insufficiently considered the air as a possible source of the so-called "unavoidable surgical infections," directly and more particularly indirectly, especially in extensive intra-peritoneal operations seems not altogether improbable.

It is well known that the danger of accidental infection is greater in a college amphitheatre where atmospheric conditions are less favorable than in an unoccupied, quiet, well ventilated, clean, operating room. This has led surgeons to adopt certain precautions. In a large maternity hospital in Dublin, Ireland, where operations were performed in an open amphitheatre before students, the number of infections was appreciably lowered after the operator and patient were separated from the students by a glass enclosure.

The fact that it is more dangerous to operate in an old but well equipped hospital operating room than in a farm house kitchen would be rather difficult to explain upon grounds other than a possible difference in the bacterial content of the air in the two places. In attempting to explain the probable source of certain accidental, post-operative, peritoneal infections that occurred recently, the following observations may be of interest. Having first inquired thoroughly into the technic of the operators, the methods of sterilizing instruments, hands and gloves and all surgical material used, and having found them all amply sufficient to eliminate and destroy the bacterium responsible in each infection, the source of the infection was still unexplained. The following facts were noted: (1) The infections occurred only in the most extensive, prolonged intra-peritoneal operations. (2) Owing to the large number of operations, the operating rooms were often in use from morning till night. These rooms and the dressing

¹Read by invitation before the Chicago Gynecological Society, Sept. 23, 1904.

Much of this work was done in connection with a practical laboratory course in bacteriology given to nurses at Rush Medical College.

rooms in the hospital, which are built upon the "block system," were seldom disinfected. (3) The accidents occurred during the winter months; no adequate system of ventilation was in vogue anywhere in the whole institution. (4) During this time a number of patients suffering from very severe streptococcus infections were being dressed in the general dressing rooms of the hospital. The pus cavities were irrigated while the patient lay upon a push-cart, the wheels of which might easily be spattered with the bacteria-containing pus droplets. The same carts were used in transporting other patients to the operating rooms. (5) Still more significant, an epidemic of streptococcus angina prevailed among internes, nurses, attendants and patients. To this we will return later. (6) The streptococcus pyogenes was responsible in each instance.

I have repeatedly been impressed by the large number of bacteria that are deposited upon the surface of an agar plate when exposed to the air in sleeping rooms, dwelling rooms and laboratories. This, together with a consideration of the facts above noted, led me to investigate the bacterial content of the air in the operating rooms, dressing rooms and wards of the hospital. The plate method was used, which consists simply of exposing the moist surface of a freshly prepared nutrient containing plate or Petrie dish to the air, to be analysed for a given period. The following results were obtained:

TABLE I.—Showing results of analysis of air as modified by various conditions:

Character of air analysed.	Total number of plates exposed.	Time of exposure.	Average number of bacteria deposited upon plates (8 cm. in diameter).
Quiet, unoccupied room air.....	18	15 min.	12
Quiet, unoccupied room air.....	18	30 min.	22
Quiet, occupied room air; hospital } wards, operating and dressing rooms }	20 40	15 min. 30 min.	31 54
Air in draught.....	16	15 min.	80
Air in draught.....	16	30 min.	104
Quiet, dust-laden air.....	15	15 min.	800
Quiet, dust-laden air.....	15	30 min.	1,320

A study of Table I will show that even under ideal conditions a large number of bacteria are deposited upon a given surface, a fact of which operators are only too often unaware. (2) When conditions are less favorable, as poor ventilation, draught, and dust, the deposition of bacteria is proportionately much greater, the average number deposited in 30 minutes varying from 22 to 1,320.

That the plate method gives reliable results in an investigation of this kind is shown by the fact that the plates exposed for twice the length of time under the same conditions contained approximately twice the number of bacteria in each instance. A careful estimate of the entire surface exposed to the air during an operation, including the field of operation, the operator's and assistants' hands, the surgical material, as gauze and instruments, the basin containing the normal salt solution in which sponges are kept and in which the surgeon cleanses his hands from time to time, is fully 100 times greater than the plates used in these experiments. The average number of bacteria deposited upon each plate in 30 minutes under similar conditions is 54; from this it can be readily seen that during the course of a prolonged, "aseptic" operation a very large number of bacteria must necessarily come in contact with the wound directly or indirectly from the air. Experience has shown that wounds are usually capable of resisting a large number of bacteria. Experiments such as these indicate clearly that a wound to heal aseptically after a prolonged operation, must necessarily withstand a large number of microorganisms. The majority of bacteria deposited upon the plates were harmless saprophytes, moulds, etc., but a careful study of the suspicious looking colonies which developed upon the plates in this investigation showed (1) that the common pus bacteria, including the staphylococcus pyogenes aureus, were almost invariably present. A relatively larger proportion of these were deposited upon the plates exposed in the hospital wards, operating and especially dressing rooms than upon the plates exposed to the purer samples of air. The number of colonies of these varied from 0 to 18 per plate in 30 minutes. (2) A streptococcus resembling in every way the streptococcus pyogenes was isolated from the air of the operating rooms upon two occasions at this time and from the dressing rooms and wards the same organism was obtained upon the majority of plates exposed. The numbers varied considerably. Upon one plate 8 cm. in diameter six colonies of streptococci developed after a 30-minute exposure in one of the dressing rooms. A number of these were tested upon blood-agar plates as to their hemolytic power; all possessed some, and one strain a rather high degree of hemolysis. The virulence unfortunately was not tested, but since the virulence varies directly as the degree of hemolytic power, as Marmorek has shown, it is safe to assume that this particular strain possessed at least a moderate degree of virulence. As a control a series of similar

experiments was carried out recently during the summer months, under conditions of free ventilation and frequent fumigation, with the result that in no instance was the streptococcus isolated. Furthermore, no infections have occurred recently.

The other very important circumstance which must be considered is the fact that during the time the accidental infections occurred an extensive and severe hospital epidemic of tonsillitis and pharyngitis prevailed among internes, nurses, attendants and patients; and as the following experiments will show is the most likely source of the streptococci found in the air. Throat cultures were made upon 25 cases, with the result that in every instance the streptococcus was isolated in large numbers and often in almost pure culture. They were found to persist in the throats for as long as three weeks after an attack. The staphylococcus pyogenes aureus and albus were present in about 25 per cent. of the cases. To illustrate the danger that may lurk in expired air to surgical wounds, a series of plates were prepared and studied as indicated in Table II.

TABLE II.—Showing results of bacterial content of expired air:

Method of inoculation.		Total number of tests.	Average number of bacteria deposited
Three violent coughs upon plates 12 cm. from mouth.	(1) Uncovered.....	37	124
	(2) Covered with 4 layers gauze	8	80
	(3) Covered with 9 layers gauze	9	3
Counting to 25 in ordinary tone of voice upon plate 12 cm. from mouth.....		34	120

Most of the throats were normal, and out of these the streptococcus was deposited in about 50 per cent. of the cases. Dr. Hamilton,² in a recent investigation of this sort, found that streptococci were deposited in this way in 33 out of 50 healthy throats, and in consequence advises the use of some mouth covering during an operation. Table II shows beautifully the advantage of wearing the proper thickness of gauze over the mouth and nose to filter the expired air. The tests were made after breathing through the gauze for one hour. The thicker layer of gauze was found to be quite efficient, while the wearing of only a few layers is untrustworthy.

In 18 cases of tonsillitis or pharyngitis, the streptococcus was

¹Gauze was worn one hour before experiment was made.

²Dr. Hamilton has kindly furnished me the above data from an investigation to be reported soon.

deposited upon the plates in every instance and usually in large numbers. Dr. Hamilton suggests that in an epidemic of this kind the streptococcus may gain in virulence by infecting one individual after another, just as its virulence may be increased by passing it through a series of animals, or growing it upon certain special nutrient media. This suggestion is supported by the following observations. The hemolytic property of the streptococci was tested during the height of the attack and at frequent intervals subsequently with the result that in every case thus tested, there was always a much wider zone of hemolysis about the colony at the height of the symptoms than after the symptoms had subsided. The virulence of one strain of streptococci deposited upon a plate at the height of the attack was very great. In this case the angina went on to the production of a peritonsillar abscess of large size, in the pus of which pure cultures of the streptococcus were obtained. In one case, a physician, I had the opportunity of making a blood-culture immediately after a terrific chill with the result that the streptococcus was found in the blood in pure culture. Polymorphonuclear leucocytes in the water of condensation of the agar slants inoculated with a few drops of blood contained streptococci. The leucocytosis at this time was 19,200. The symptoms,—slight headache, some prostration and moderately sore throat,—were present for only 24 hours previous. Twenty-four hours after the chill with intense prostration and high temperature, another blood culture was made with negative results, the leucocytosis now being 21,500. The patient recovered promptly. If the streptococcus, when lodged upon a tonsil can cause such severe symptoms in so short a time, even penetrating into the circulating blood, is it unreasonable to suppose that when lodged upon delicate peritoneum, even in small numbers, they may cause a fatal septic peritonitis?

The relation of the occurrence of the chill to the occurrence of streptococci in the blood is an interesting one. It is well known that a chill usually occurs in severe streptococcic infections. In the above cases a definite chill occurred in about 60 per cent. It is to be regretted that blood cultures were not made in the above series immediately following the chill. The case cited above suggests that important information may be obtained by a careful study of the blood at the time of or immediately following the chill.

It is hoped that one result of this investigation will be to familiarize surgeons with the possible danger that lurks in the air of

hospital operating and dressing rooms, and also with the much greater danger of operating without taking proper precautions to protect the operating wound from the bacterial contamination from their own mouths and nostrils in coughing, speaking and forcible breathing.

SUMMARY.

1. That there is what might be called "hospital air" which, under circumstances such as those described, may become rich in pathogenic bacteria, there can be no doubt. Observations such as these compel one to regard the surgical maxim that "Wound infection means contact infection" is not necessarily true, and that a due amount of attention must be paid to the condition of the air whenever much surgical work is done.

2. The streptococcus seems to become more virulent or more numerous during an epidemic of angina due to this cause.

3. Since the streptococcus is more virulent during an attack of tonsillitis, operators, assistants and nurses having such an attack should be isolated.

4. The operator, the assistant, and all connected in the handling of surgical material before and during the operation should wear a proper mouth covering. All sterile surgical material should be exposed to the air as little as possible.

5. All operating rooms should be frequently fumigated with an efficient disinfectant.

MOVABLE KIDNEY.

BY

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It is the intention of the writer of this paper to briefly consider the subject of *movable kidney*. It would not be possible in the time allotted to fully cover the subject. Nephroptosis may be divided into three degrees. *First degree*, or palpable kidney, in which the lower pole of the kidney may be felt on deep pressure, during inspiration, causing no symptoms. The writer believes that this mobility is physiological. The District Coroner. Dr. L.

W. Glazebrook, states that in a study of 350 autopsies on women who have died, apparently in good health, there was noted a mobility of the kidney of from one to two inches. It must be taken into consideration, however, that there is always more or less post-mortem relaxation.

Second degree, or movable kidney, in which the upper pole of the kidney may be felt on deep inspiration and can be easily pushed down to about the level of the umbilicus. In this class of cases the majority exhibit symptoms traceable to nephroptosis, many of which may be relieved by means other than operative. This condition is never congenital.

Third degree, or floating kidney, in which the organ moves freely below the level of the umbilicus, possesses a larger arc of mobility, and is congenital. This class is never relieved by abdominal bandaging, abdominal supports, or treatment by posture, and when they exhibit symptoms traceable to renal disturbances they always require nephropexy.

Etiology.—Abnormal position of the kidney is usually acquired, it may be congenital; in the latter instance the condition may be due to redundant perinephritic tissue, the kidney thus having a mesonephron, allowing it to float more or less freely about the abdominal cavity. Movable kidney is found in both sexes, but is rare in men.

In 1901, Edebohls reported 186 operative cases, in which three were in men, the latter more rarely requiring operation. Hirst states that about "20 per cent of all women examined, exhibited an abnormally low and mobile right kidney, with its lower pole often below the umbilicus, and that only about $2\frac{1}{2}$ per cent. of these require nephropexy."

Movable kidney may be caused by the pressure of tumors, abdominal relaxation, pregnancies, tight lacing, traumatism, as from falls, heavy lifting, violent coughing and sneezing associated with a relaxed condition of the abdomen, general relaxation of all the tissues of the body, enteroptosis or Glénard's disease, emaciation with waste of the fatty capsule in which the kidney is lodged, abnormally long renal vessels.

The right kidney is much more apt to be movable than the left. This is to be attributed to the descent of the liver with each inspiration, the loose connection between the ascending colon and the right kidney, the absence on the right side of an aponeurotic layer between the peritoneum and the anterior surface of the kidney.

Symptoms.—Movable kidney may exist without symptoms. Its

discovery may be accidental. The case should only be classed as movable kidney when the upper pole can be readily pushed down to the level of the umbilicus. The symptoms may be either local, general or reflex. Local symptoms are usually more marked in extreme cases of mobility, as in floating kidney. Reflex and general symptoms predominate in more moderate degrees of mobility. There may be a dragging sensation in the back and side, or between the shoulders, or a sense of weight or pressure in the abdomen or lumbar region, especially after walking or long standing or hard labor of any kind. The pain may be referred to the region of the sacrum; there may be crises of pain (Dietl's Crises) resembling renal colic; neuralgic pain of the great nerves of the affected side; pain in the kidney itself is not usual, and when it occurs is usually due to traction of the renal vessels or obstruction of the ureter. The patient may sometimes notice a lump in the side which may, at times, disappear. There may be varied disturbances in the digestive tract, as epigastric pains followed by vomiting, attacks of constipation, followed by diarrhea; attacks of gastrointestinal indigestion, with occasional nausea and vomiting. Dilatation of the stomach may possibly be caused by a dislocated kidney as the two conditions are not infrequently associated. Some cases of displaced kidney are characterized by repeated and severe attacks of nephralgic or gastralgic pains, vertigo, nausea, vomiting, collapse. These attacks may be due either to a twisting of the renal vessels or a twisting of the ureters; in the latter case, repeated conditions of hydronephrosis may occur with diminished diuresis. The urine may be concentrated and contain an excess of uric acid or oxalates, sometimes albuminuria, pyuria, polyuria, and hematuria. When floating kidney is associated with enteroptosis it may give rise to the above symptoms, with the addition of greater discomfort and increased digestive and nervous disturbances. The general symptoms may be headache, backache, mental irritability, hysteria, neurasthenia, nervous indigestion. Many of the symptoms are relieved or may disappear while in a recumbent position.

Diagnosis.—An abnormally movable kidney is usually discovered without much difficulty if the abdominal wall be comparatively thin. If the abdominal wall is quite thin it may be even possible to palpate both poles of the kidney without its being classed as movable, but when the upper pole of the organ can readily be brought down to the level of the umbilicus, or easily associated with a train of local reflex or general nervous dis-

turbances, especially in an emaciated woman, the diagnosis of a movable or a floating kidney is quite simple. Tumors of the gall-bladder may be mistaken for movable kidney, or the two conditions may co-exist. They may be present in the umbilical or right hypochondrial region. They both may give rise to many of the same symptoms, but jaundice is more rare in the latter condition. Tumors of the gall-bladder move in a much shorter arc of a circle than floating kidney. The former tumor is much rounded while the latter is more or less oblong in shape with its hylum usually directed towards its arc of attachment. It may be necessary to distinguish between Dietl's Crises and attacks of renal or hepatic colic, or intestinal obstruction. On percussion a tympanic note is usually heard over the displaced organ, and some resonance over the area normally occupied by the kidney which disappears on pushing the kidney back into its proper position.

Treatment.—As many cases of movable kidney cause no symptoms, active treatment becomes unnecessary, except to suggest palliative measures. If the symptoms can be clearly traced to movable or floating kidney, if the pelvic organs are normal, if diseases of the alimentary tract can be excluded, if other abdominal and pelvic tumors can be differentiated, treatment is then indicated.

Treatment is either palliative or operative.

Palliative treatment.—As most of the cases are associated with more or less emaciation, much may be accomplished by a general tonic treatment, with forced feeding and rest in bed. It has been the writer's habit, in these cases, whether associated with gastrop-tosis or enteroptosis, to make the patient sleep on an inclined plane, with the foot of the bed elevated six or eight inches. The application of one of the various abdominal supporters, or properly adjusted corsets for use in the daytime, has been of material benefit in the milder cases. The bandage or corsets are best applied with the patient in the Trendelenberg position. Over-exertion should be avoided, as long walks, heavy lifting, sweeping, straining at stool, etc. The nervous, digestive and other symptoms require special treatment as they arise. When milder measures fail and the symptoms clearly point to the condition of movable or floating kidney, then radical means of relief may become necessary, and nephropexy should be performed.

It would lengthen the scope and intent of this brief paper to attempt to recite the history of the various methods which have

been suggested for anchoring the kidney since the first operation, performed by Hahn in 1881. The writer will, therefore, only briefly mention the several methods of operation which seem to possess the greatest anatomical advantage.

The method described by Edebohls in his paper, read before the Medical Society of the State of New York, October 15, 1901, seems to possess special advantages. After delivering the kidney, with its capsule, through an incision made along the outer border of the erector spinæ muscle, the whole of the fatty capsule is dissected off and removed, exposing the capsule proper through its entire length. The capsule is now nicked near the middle sufficiently to admit the tip of a grooved director. Pass the director through the opening and between the capsule and the kidney, and upon it divide the capsule proper along the entire length of the convex border of the kidney to half way around both upper and lower poles of the organ. The capsule is now separated bluntly from the kidney substance and reflected forward and backward toward the renal pelvis to about midway between the external and internal borders of the kidney. The capsule will then have been turned back on itself, much like the lapel of a coat. Pass four suspension or fixation sutures of chromic catgut through the reflected capsular flaps. Two are placed on the anterior surface of the kidney,—one at the middle of the upper and one at the middle of the lower half of the organ. The two other sutures are placed at corresponding points on the posterior surface of the kidney. Each suture runs parallel to the long axis of the kidney and is passed through the reflected capsule close to the line of reflexion, then through the underlying attached capsule, and along beneath the latter between the capsule and the kidney substance, for a distance of 3 cm., when it again emerges over the attached and reflected layers of the capsule. The kidney is now returned to the abdominal cavity, and each suture end, in succession, is passed through the abdominal parietes, and from thence outward, four to the inner and four to the outer side of the incision. All of these sutures will emerge on the surface of the latissimus dorsi at distances from each other, equal to those at which they leave the capsule proper, the highest suture ends emerging immediately beneath the twelfth rib. The muscle and fascia is now closed by interrupted sutures, passed in such a manner as to turn the raw surface of the quadratus muscle towards the kidney. This is affected by suturing the latissimus dorsi and the lumbar fascia,

forming the outer lips of the wound to the latissimus dorsi, the sheath of the erector spinæ and the outer lip of the open sheath of the quadratus to the inner margin of the incision. Gently draw taut the eight ends of the fixation sutures to take in slack between the internal surface of the abdominal parietes and of the capsule proper, so as to bring the denuded surface of the kidney in contact with the raw surface of the quadratus. The ends of the four suspension sutures are now tied to each other. The suspension and muscle sutures are buried by closing the skin over them with the intracuticular suture. This method gives a firm attachment between the parietal wall and the kidney.

Raimon Guiteras publishes in the *Medical Record*, April 11, 1903, his method of fixing the kidney. In his technique the effort is to bring the kidney into a more nearly normal position than is accomplished in the preceding operation.

Canaç-Marquis (*Journal American Medical Society*, April 4, 1903) describes also a method of splitting the capsule and of dissecting it from the parachyma of the kidney, using a continuous, in and out, silkworm gut suture, and passed on each side of the incision, through the skin, fat, muscle and capsule, and held by lead nickle-plated shields and shotted after the silkworm gut has been drawn snug.

A. H. Goelet (*American Medicine*, October 3, 1902) says that operation is always necessary for nephroptosis of the third degree; that it is unnecessary to decapsulate the kidney or transfix the parachyma with sutures; that firm adhesion of the capsule on the muscle of the back may be secured if these two structures are held in contact for a sufficient length of time. He employs two sutures of silkworm gut, one having three insertions under the fibrous capsules of half an inch in length each, and the other two insertions of the same length. They are brought out through the structures of the back to the upper angle of the wound, just below the twelfth rib and tied over a small pad of gauze to prevent cutting and loosening of the suture loops. These sutures he removes at the end of three weeks. He reports having fixed 171 kidneys by this method, without a death, and but one failure of the kidney to remain in position. This failure was due to violent retching of the patient ten days after operation, the patient having to take an anesthetic for an operation on a pelvic growth.

It is the writer's belief that many cases in which the operations failed to cure the patient of symptoms are because the cases

have not been well selected, and the symptoms were possibly due to conditions other than simple nephroptosis. When this condition is associated with gastroptosis or enteroptosis, it cannot be expected that an operation will cure the patient without treatment directed to these complications.

C. A. McWilliams (*Medical News*, October 4, 1904) reports 42 nephropexies, with the following result: 52.3 per cent. cured of subjective symptoms, 35.7 per cent. benefited, 10.9 per cent. not benefited, 3.12 per cent. mortality.

The writer has heard a number of physicians express their opposition to nephropexy because of failures they had had in patients who had resorted to operative measures.

It is the writer's belief that the principal causes of these failures are as follows:

First.—Delay in operating until the health of the patient is seriously impaired.

Second.—Failure to properly prepare the patient for operation, and thus avoid vomiting which may loosen the kidney from its new attachment.

Third.—Chronic enteroptosis as a complication of nephroptosis. As the latter is apparently more important in producing symptoms, the organ should not only be fixed but the general viscera should be supported by proper bandages.

Fourth.—Delay in operating until the kidney has become seriously crippled or an incurable inflammation of the organ developed.

Fifth.—Faulty insertion of the sustaining sutures, tearing out or too rapid absorption.

Sixth.—Failure to completely detach the fatty capsule from the capsule proper, so as to separate the organ from the colon and duodenum on the right side, and the colon and small intestine on the left side.

Seventh.—Attachment of the kidney too low down where it will be subject to pressure by constricting waistbands, or when the suspension sutures are placed too near the lower pole, thus allowing the upper pole to fall forward or to form a flexure of the kidney.

Eighth.—Too early removal of the sustaining sutures or too early absorption of the fixation sutures.

The following deductions are therefore offered:

First.—That the relief obtained from bandaging in any case

of movable kidney will depend on the presence and the degree of associated enteroptosis.

Second.—That fixation of the kidney in as nearly a normal position as possible is the correct method of surgical treatment.

Third.—That in all cases where the relief of the symptoms cannot be obtained from either bandages or correct corsets, nephropexy is indicated.

THE ROCHAMBEAU.

CONSERVATION OF THE NATURAL RESISTANCE OF PATIENTS IN SURGICAL WORK.¹

BY
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LAWSON TAIT was the first great exponent of the principle of conserving the natural resistance of the patient. The reasons given for his remarkable statistics were various, and not all were complimentary, because many of us could not understand, judging from our own experience, how he could have so small a mortality rate. Tait operated very quickly. He did no more than was necessary in a given operation. He avoided handling viscera unnecessarily. He avoided disturbing the patient's mind with details about what he was to do, and carried in his presence an air of optimism. He apparently treated his cases and his patients lightly. Many of the Fellows of this Association knew Mr. Tait personally, and did not join in the general scepticism concerning his statistics, which were remarkable for that day and time.

The repair of surgical injury depends primarily, secondarily and finally upon a proper hyperleukocytosis, using that term in a generic way to avoid elaboration of detail in statement. Hyperleukocytosis is a manufacturing process, carried on under the control and guidance of the sympathetic nervous system. The more we injure a patient by surgical work, the more we lessen the development of a protective and reparative leukocytosis, and the more also do we lessen the natural resistance of the patient.

What are the common ways for lessening the natural resistance

¹Read at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists at St. Louis, Mo., Sept. 13-16, 1904.

of the patient? Prolonged administration of anesthetics is one way. All of us have seen patients carried to the danger line with ether and with chloroform. On the other hand, we have watched with satisfaction the work of men who are expert in administering an anesthetic; they begin with nitrous oxide, or add oxygen, changing from ether to chloroform, or vice versa as the case demands. They do it skilfully, quickly, nicely, and avoid the anesthetic shock which takes away from the patient some of his resistance.

Prolonged operating is another factor in taking away the patient's cell self-control. Quick work was a point in which Tait excelled. Quick work, if in proper proportion and not at the expense of incomplete work, but simply expeditious work, conserves the natural resistance of the patient. Almost any patient is in good condition after fifteen minutes of operating, no matter what we are doing. Almost any patient, too, is depressed by an hour of operating, no matter what we are doing. Some men will respond by saying that if we are to do quick work we cannot make approximately complete hemostasis—a point that has been insisted upon by many writers, who say that if we do not make complete hemostasis we are likely to have infection. Opposed to this fact we have another. If we operate so quickly that the patient retains his natural resistance we do not need such complete hemostasis, and the patient will absorb very rapidly the culture media that are left in the wound. One of the Fellows present will at once call to mind a case of his in which I operated for double loose kidney, and both sides suppurated. It is the only case of loose kidney I believe in which I ever had suppuration, excepting one in which a piece of gauze was left in the wound. In operating for loose kidney I seldom tie a vessel from first to last, but in the case in question perhaps suppuration would have been avoided if more time had been spent in hemostasis. My own impression is that we did not shave and prepare the skin properly, but I will not shift any of the responsibility in this case or in the one with gauze left in the wound. I seldom spend more than fifteen or twenty minutes in the loose kidney operation, from the first cut to the last suture, and patients are left in better condition than they were in earlier work when great pains was taken to ligate every bleeding point.

There are many cases in surgery in which quick work means incomplete work, from one point of view, but it is a matter based

largely upon judgment in the effort to obtain, or to retain rather, the natural resistance of the patient. The use of gauze packing in abdominal work is another way for lessening natural resistance. The development of the employment of gauze packing was the natural outcome of the teaching on the subject of drainage a few years ago. We were trying to drain away all septic fluids and culture media, and got to the point where the matter was overdone. The momentum and velocity of the idea carried it beyond its field of usefulness, and we overshot the mark. Now we have got to go back and make a new series of observations. The matter of putting in gauze reached such a point in New York that I accused some of my friends of committing taxidermy upon their patients. If we introduce a yard of gauze into the peritoneal cavities of ten healthy policemen to-day, very few of them will feel well to-morrow, and they will not appear on their beats soon, even though we save almost all of them by subsequent treatment. Now, how can we expect a weak septic peritonitis patient to bear what these strong men could not bear well?

If the Japanese could get a yard of gauze into the peritoneal cavity of each Russian there would soon be a victorious shout of "Bonzai." It is easy to lose patients with peritonitis. It is easy to take away the resistance which would carry them through if we did not attack them too severely with our surgery. If we operate quickly, get in and out quickly, disturb the viscera as little as possible, give as little anesthetic as will suffice, and come as near as possible to leaving the patient alone we conserve the natural resistance to such an extent that I know of no more satisfactory cases to treat, in the feeling that we are accomplishing something, than cases of peritonitis. In appendicitis work one will have such a list of recoveries that he may be accused of removing normal appendices. The tendency is to do too much,—conscientiously if you please—but too much.

Washing and wiping the peritoneal cavity is, I believe, another way of lessening natural resistance. In some cases it certainly produces shock, and by so much lessens the ability of the patient to manufacture leukocytes promptly. If we wash and wipe the peritoneal cavity carefully, and put in extensive drainage apparatus, can we get out all of the septic matter? By no means. Is there some one who can get it out by his special method? Yes, the patient can do it, but we cannot. Leave him as nearly uninjured as possible, and it is astonishing to observe what he will do with his toxins. If we do not knock the patient down and

keep him down, it is perfectly marvelous what recoveries these patients will make.

But it is right here that surgical judgment is required. That is, however, what we are practising for. I will admit that it is not easy. I am not speaking to an undergraduate class of students. To them I would not dare say what has been said in the last few minutes. This is an audience of experienced men. Some will ask, "Why operate at all in a case of appendicitis with abscess, if we are to leave the patient almost alone?" The whole principle hinges on one point, which requires the statement of another point for elucidation. If the surgeon pricks his finger while operating in a case of septic peritonitis, the operator may be dead in a week while the patient goes on to recovery. Why is that so? The patient has called out all of his resistance factors, chiefly hyperleukocytosis, while the surgeon was unprepared to meet the onset of a colony of rapidly proliferating bacteria. That is the reason why the patient recovers and the surgeon dies. Was it necessary for the surgeon to get all of the septic matter out of the peritoneal cavity of that patient who recovered? No. All he needed to do was to turn the scale in the warfare between the bacteria and the leukocytes, and then leave the patient to do the rest. That is the principle. By quickly turning out most of the septic material without injuring the patient by the process, the tide of battle is turned, and the patient's natural resistance is conserved.

616 MADISON AVENUE.

AN HISTORICAL RÉSUMÉ OF TUBERCULOUS MENINGITIS
FROM HIPPOCRATES TO THE MIDDLE OF THE
NINETEENTH CENTURY.

BY

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IN the July, 1904, issue of the *Medical Library and Historical Journal* appears a very excellent article from the pen of Dr. John Ruhräh, of Baltimore, entitled "The History of Tubercular Meningitis," in which the question is treated in a most concise manner. However, the subject is an important one and it occurred to me that perhaps it should be treated somewhat more in detail than has been done by my distinguished Maryland confrère, and this is the only excuse I have to offer for writing the following sketch.

Under the title of Tuberculous Meningitis I shall include all those affections described by former writers under the denomination of simple, granulous, or tuberculous meningitis, hydrocephalitis, internal hydrocephalus, cerebral fever, colluvies serosa, etc. The propriety for doing this will be seen by reading this paper which will show that the reason for all these terms is explained by the different systems which have from time to time dominated medical science, as well as by the confusion which reigned for many hundred years regarding the distinction of this particular disease. The ancient physicians have only left us a few chapters on diseases of children, in which meningitis finds no mention, but nevertheless they were perfectly familiar with it. But as they were fully aware that the disease is common to both children and adults they give the description of the affection in books treating the pathology of adult life, and consequently it is in them that the first notions regarding it are to be found.

Hippocrates wrote numerous passages on inflammatory cerebral diseases, and in the third book, chapter 1, *de Morbis* (Foës edition) the following description under the title of *ὁ ἐδῆμα ἐγκεφαλοῦ* is to be found: "When the brain, the seat of an inflammation, increases in size, there is headache, but which is more

intense in that portion where the inflammation exists. It is also present in the region of the temples. The patient has ringing of the ears, hearing becomes obtuse, the blood-vessels are distended and beat. Fever and chills declare themselves, but the pain does not diminish, it has only some slight remission when the fever increases in intensity. When the patients get up the pain causes them to cry out, so that they are obliged to lie down very shortly. This disease is fatal, one cannot tell on what day death will take place. Usually, however, it occurs before the seventh day."

According to Selle this description well applied to one of these fevers to which, in his time, the name of continuous fever with inflammation of the brain had been given, but in reality from our present knowledge I believe that Hippocrates was simply describing tuberculous meningitis. A few lines further on a paragraph given up to *σφαχελισμὸς ἐγγεφαλοῦ* will be found, which does not appear to correspond to any of our present diseases, but probably more to a certain condition produced by several serious organic cerebral lesions. The word *σφαχελος* should in no way lead us to misjudge the anatomical changes, and this is the opinion of the best commentators of Hippocrates, among whom may be included Galen. Although the paragraph which has just been quoted in no way applies to the subject of this paper, there is another to be found in the second book *de Morbis* which is full of interest and would lead one to believe that the physician of Cos was familiar with a very important form of meningitis on which the larger number of modern works have been constructed. He says: "If water is produced in the brain, there is violent pain in the synchyput and in the temples and sometimes in other parts of the head. At the same time there are chills and fever; the region of the eyes is painful; sight becomes dull, the pupil is deformed and there is diplopia. If the patient gets up he has vertigo; he cannot bear the impression of wind or light. There is ringing of the ears; he vomits saliva, pituit and sometimes food." I believe that this description is that which at the commencement of the 19th century was termed acute hydrocephalus and what to-day is tubercular meningitis, and this is the opinion of several illustrious physicians of the early part of the last century, among whom may be mentioned Laennec and Gibert.

Hippocrates also gives the history of an affection called *φρενίτις* by him, and which many authorities have regarded as the first description ever given of tuberculous meningitis but it is quite suffi-

cient to invoke the authority of Littré in order to be convinced that this opinion is erroneous. In his introduction to the first and third books of the Epidemics he places phrenitis in the continued fevers and classes it beside the *causus*, of which there is only one variety.

After careful consideration of the passages relating to this affection it would appear to me more than likely that phrenitis has no relation to cerebral inflammation or of the meninges, and in this respect we are of the same opinion as Littré, but we differ as to the interpretation which he gives of the following passages. In book 2 *de Morbis* is to be found the following: "The phenomena which accompany the death of phrenitics are these. They are in a perpetual delirium, because their corrupted blood is agitated to its highest pitch, they become consumed and wither away under the influence of fever and the abstinence in which they live." In the third book of *de Morbis* the following passage occurs: "Phrensies arise from other diseases." The twelfth aphorism of the seventh section says: "Phrenitis occurring during a peripneumonia is bad." Then again if one will take the trouble to run through the first pages of the first book on Prorrhetics, one will find numerous instances in which the word phrenitis should be taken, according to our way of thinking, in a different sense from that which Littré gives it, and it would seem more probable to us that it signifies an acute febrile condition with delirium and not an essential continued fever. This denomination applies to a group of symptoms which may be present in various affections, as for example in a continued fever, generalized septic infection or in cases of extreme inflammatory processes; in other words, the phrenitic condition is not a disease per se.

In order to give more strength to our interpretation it may be said that the term of *phrenitic fever* is not to be found in Hippocrates, at least so far as our knowledge goes, but one will find the expression of causal fever (*πυρετός χαισώδης*) as synonymous of *causus*. We consequently cannot place *φρενιτις* and *χάσους* side by side, because the latter is a distinct disease, while the former is merely the product of different affection. This digression appears to us of some necessity, because in later centuries one will find the word *φρενιτις* interpreted in other ways than we have indicated and more usually applied to meningitis.

The works of Hippocrates not only give a résumé of diseases of the brain and its membranes, but also contain several reports

of cases which unfortunately are not detailed sufficiently so that one can easily classify them. Several commentators have recognized a meningitis in the 16th patient of the third book on Epidemics, in the 4th patient of the same book, in the 5th patient mentioned in section third, third book, and in the first patient of book third. The 34th case mentioned in the seventh book of the Epidemics is that of a wound on the left temple. There was sudden fall, then fever occurred in several days, followed by delirium and death. This instance is probably nothing more than a septic inflammation of the meninges from traumatism.

If one is desirous of ascertaining whether or not Hippocrates has described this affection in children, he will in part be deceived because only very infrequent passages on this subject have been found. He did not, as at present, make such a distinct difference between diseases of infancy and those of adult life and at the end of the *Praenotionum* the following passage is to be found: "In order to rationally prognosticate taking into consideration children and patients of older years, those who must perish and those which will be saved, one must consult the ensemble of signs, such as have been described in each case."

Now, since these signs are the same at all periods of life Hippocrates apparently thought it useless to write for each disease as many descriptions of it as there are different ages. And proceeding in this way, I really think that he placed himself on a much higher level than we at the present time are, as far as pathology is concerned. He did not believe that diseases changed in their nature for the simple reason that they occurred in infancy, but, nevertheless, he does not deny the influence exercised by age, as is found in the *Praenotionum*: "Spasms occur in children if the fever is acute, if the belly does not become relaxed, if they are taken with insomnia, if they have frights, if they cry out, if they allow tears to fall, if their face becomes either greenish, livid, or red. These accidents are very common in the newly born and up to the age of seven years. Subjects who are older and adults are not exposed to spasms during fever."

Other passages on the nervous disturbances of infancy occur, but they are of little interest. From an attentive examination of the paragraphs that we have cited, it becomes evident that Hippocrates had met with and described meningitis, and, I believe, mostly the tuberculous variety. It is true he did not give all the details relative to the seat, the nature of the lesion and the symptoms, but he nevertheless was able, even with the incomplete documents

that he possessed, to outline the history of this disease and to appreciate its principal clinical modalities. Thus, for example, he has given us an undoubted case of traumatic meningitis, and the paragraph which commences "If water is produced in the brain," etc., certainly is nothing but a clear and evident description of tuberculous meningitis. It is quite true that opinions differ regarding this point, because a number of physicians have believed that this was a description of chronic hydrocephalus, and even Galen is of this opinion. It has been imitated by several authors of monographs on chronic hydrocephalus, and even Coindet appears to be among this number. Littre offers no opinion, but in favor of our interpretation we can cite the ideas of the great Laennec. Without, however, relying on the opinions of others, it is quite sufficient to read the passage in question in order to be convinced that it describes an acute disease, and for that matter, if Hippocrates had had chronic hydrocephalus in mind, he would without doubt not have failed to mention among the phenomena of the disease that which of all is the most remarkable, namely, the distention of the skull.

The works of physicians who came immediately after Hippocrates have, unfortunately not been handed down to us, and a lapse of five hundred years went by without leaving any document relative to the subject of this paper. During these five centuries many sects divided medicine, and a celebrated school, that of Alexandria, had the time to rise and to become nearly extinct during this period. During the first century of our era a writer is to be met with whose work should be considered for an instant. Celsus has only left us incomplete descriptions, but in the second chapter of the fourth book *de Capitis dolore* he speaks of a chronic affection which, he says, the Greeks call *ὀδροκεφαλόν*, and in which the head increased in size. In the 18th chapter of the third book he describes three kinds of delirium, among which he classifies what one called in his epoch phrenitis. He defines it as delirium accompanied by acute fever. This, however, is the interpretation that Foës has given, but Celsus does not speak either of the seat of the lesion, its nature, or of its frequency according to the age of the patient. As to the other kinds of delirium that he has mentioned, it is evident that they are merely varieties of insanity.

Areteaus, who is believed to have lived at the beginning of the second century of our era, occupied himself with the diseases of the brain, but unfortunately for us, this particular part of his writings has not been handed down to us *in toto*, and we only

have his treatment of these diseases. In the 12th chapter of the first book *de Cur. m. ac.*, it is quite evident that he makes a distinction between idiopathic and symptomatic phrensy.¹

We next come to Galen, whose powerful and vast mind amassed together in a single sheaf nearly all the principles of the sects existing at this time. In his writings we find the notions of Hippocrates, but they are lost in a mass of theories and more or less futile precepts which in that day were current among physicians. Then again, several of the denominations of Hippocrates seem to have lost their primary acceptations in the writings of Galen. The word phrenitis, the sense of which according to Hippocrates we have given, receives quite another signification at the hands of Galen, for it no longer means ordinary meningitis as we know it. In *de Locis affectis*, 31, the following is found: "But the characteristic and principal sign of phrensy is that delirium does not abate, even when the fever diminishes, because the brain is suffering from a primary and distinctive affection. Then again in *de Sympt. causis* one reads: "Phrensy does not only arise in inflamed liquids, but also one meets with a phlegmasia of the brain and its membranes." Then again, in the second commentary of the first book on the Epidemics he says: "It is the same humour which causes either an ardent fever or a phrensy, according to the seat in which it becomes localized." And lastly, in the *Medicus, L. Isag.*, 55, is the following: "Phrensy is an alteration of the intelligence in which there is a violent delirium, disordered movements of the hands and an acute fever. Its principal cause is the bile. It has for its seat the brain or its membranes, which one calls meninges."

Galen also introduces new elements into the question, and for him it is not simply an inflammation of the brain, but is in reality a general affection which becomes localized in the head. He goes more into detail as to the nature of the disease, which he believes is due to a change in the humors. These, by their abnormal movements, produce fever, and among them it is the bile which causes this perturbation, the effects of which become localized more especially in the brain. Consequently the cerebral disease which we are now studying is, according to him, due to the bile.

This idea, which naturally at the present time appears futile, does not, however, merit as much disdain as might be thought. Stoll took it up again and defended it in his description of phrensy,

¹The meaning of the phrensy, as employed by the older writers, is an inflammation of the brain and its membranes.

and under the protection of so eminent a name it was adopted during the latter part of the eighteenth century by a large number of physicians.

If we now examine the description of the symptoms as given by Galen, they will be found scattered throughout various portions of his writings. In *Isag. L. 67, de Signis cerebri patientis*, several symptoms of meningitis will be found. In *de Loc. affect.*, Book 4, is to be found a study on the various deliriums of meningitis, and on aberration of the senses and of the mind presented by phrenitic subjects. Following this passage this writer reports two cases, one of which was his own case. In the fourth book, *de Causis puls.*, he notes the hardness, rapidity and frequency of the pulse, and believes that when the latter is carried to a high degree a syncope may be looked for. As to delirium occurring without fever, he reserves for it the name of mania, and establishes in another passage the distinction between idiopathic and symptomatic phrensy.

From these passages it becomes evident that Galen was acquainted with simple, acute meningitis, but as regards that form which at the commencement of the nineteenth century bore the name of acute hydrocephalus, I have been unable to find anything in his writings bearing upon it. It is quite true that he speaks of hydrocephalus, but rather as a chronic affection, and he even divides it into varieties in *Medicus*, Is. L., 59. I will give it somewhat in résumé, for the reason that it has been constantly reproduced in all times, and several physicians wish to include the acute form under this head. (1) The liquid is seated between the brain and its membranes; (2) between the membranes and the bone; (3) between the bone and the pericranium, and (4) between the pericranium and the skin.

Foës includes ὁδὴν ἐπὶ τῷ ἐγκεφαλῷ of Hippocrates in the second division, and states that Paul of Egina overlooked speaking of this variety when reproducing Galen's classification.

Before leaving the subject it might be well to indicate in what way one admitted a few acute affections in this division, and that one wished to there discover acute tuberculous meningitis. The word hydrocephalus formerly received a more extensive meaning than at the present time, and was intended to signify every liquid deposit arising under the integuments of the head, no matter what the nature of the fluid might be, because we find in the *Ascript. finit. med.* the following: "Hydrocephalus is a collection of aqueous humour or blood in some part of the integuments

surrounding the head. All tumefactions of this part and all cephalomatata are consequently to be included in this division, which should necessarily include tumors having an acute progress; but the latter had no relationship to what was termed acute hydrocephalus, and which to-day means tuberculous meningitis, and can in no way be included in this classification.

From all this it becomes evident that the notion of Hippocrates regarding tuberculous meningitis, instead of becoming better known, was completely lost in Galen's time. It remained for long years in a profound oblivion, and those physicians who, after the advent of Galen, published some medical works added practically nothing to science, and allowed it to remain as it had been left by this great man. They were nearly all his commentators, and in their books one finds merely general notions on phrensy. They made no strict distinction of its various forms, nor added anything new relative to its seat or its nature.

Coelius Aurelianus has left us a quite distinctive and remarkable description of phrensy, to such an extent that it received Stoll's praises. He, for that matter, places its seat in the brain (Book f, Tard. pass.). Oribasius, who lived in the fourth century, says that this disease not only causes inflammation of the brain, but that it destroys the meninges as well (Book 4, *de Cert. infl. cur.*). He also presents a few considerations on diseases of children, but does not mention any acute cerebral affections occurring among them. As to Alexander of Tralles and Paul of Egina, they offer no passages which are of interest, unless it is that the former, who by perverting the sense of the word phrensy applied it to abdominal affections with delirium, as well as to those of the brain. He, however, was careful to say that in the first case the physician was dealing with a pseudophrensy.

If we now leave Greek medicine, which became extinct with the death of Paul of Ægina, and if we pass on to the Arabian authors, we only meet with poor compilations without any direct observation on the nature of the disease. This period might be passed over in silence, but in order not to be unjust in reference to it I may say that it has furnished us the first treatise *ex professo* on the diseases of children. Composed in the tenth century by Rhazes, it is divided into small chapters consisting of only a few lines each. The third is entitled *de Magnitudine capitis puerorum* and considers chronic hydrocephalus principally, to which the author adds a new kind, composed of accumulation of gas in the head. In all these chapters there is not a single word

relative to meningitis, which is not at all astonishing, because it has been only in very modern times that diseases of infancy and childhood have been considered as a class apart. It should not be forgotten that, although the older physicians understood diseases of children in such a restricted manner, it was not from ignorance on their part, for the reason that, as we have already pointed out, they classified the description of diseases of adults and those occurring in children in the same chapter.

Now, if one wishes to find any documents relative to meningitis in children in the writings of Rhazes, it is necessary to look for them other than in his work *de Morbis infantum*, and to read what he wrote in other works on phrensy in general. He says: "When a continued fever seizes the patient, producing a feeling of intense weight in the head, with redness of the face and eyes; if there is throbbing pain within the cranium, with fear of light; if the pulse is more rapid and more frequent than normal, these symptoms are true indications of a commencing phrensy. If to these signs a dry and black tongue is added, with a delirium sufficiently severe so that reason can no longer dominate, if there is insomnia, it may be said that the phrensy is in full evolution." (Abub. Rhaz., *Opera. De Arte med.*). He gives no indication regarding the seat nor the varieties of the affection.

Avicenna, who wrote his Canon in the following century, reserved the same notion relative to phrensy and gave nearly the same facts. A chapter of his first book is entitled *de Ægritudinibus quae infantibus accidunt*, is only filled with formulæ, and for that matter this author, as well as Rhazes, reproduced Galen's division of hydrocephalus.

It is well known that from this time on a great number of years passed by during which science, which already only lived on compilations, finally became definitively arrested. Very fortunately, the discovery of printing gave a new and happy prospect for all sciences, and medicine came in for a large share. The Aldes of Venice, by commencing in 1470 the publication of *Medici antiqui*, found many imitators in a large number of celebrated publishers. From this scientific movement was born two different tendencies among physicians in the sixteenth century. Some, full of enthusiasm for the old masters, studied them without respite, while others, in spite of everything, wished to throw off the yoke. Among the former one finds practically nothing but the commentaries on the works of Hippocrates and Galen, and they interpreted the acute cerebral infections exactly as their

models had done. As an example of this one has merely to consult Prosper Alpin, where one will simply find just what Galen wrote on this subject. In 1556, Jacob Sylvius reproduced word for word several phrases on phrensy as given by Galen.

This epoch is, however, remarkable because it saw the appliance of the first true really profound treatises on children. One was by Ferrarius, and the other from the pen of Mercurialis, entitled *de Puerorum morbis tractatus locupletissimus*, published at Frankfort in 1584. The latter work, which was the only one of the two I have been able to consult, contains nothing on meningitis, and it is hardly possible to believe that the author makes allusion to this disease when he describes convulsions produced by an internal cause accompanied by a severe and malignant fever. Coindet has quoted from another passage of this book in which he believes the writer refers to acute hydrocephalus, but this opinion appears to me somewhat hazardous.

As to those writers whose character of independence caused them to endeavor to overthrow the ancient doctrines, their numbers steadily increased from the advent of Paracelsus on. Masterly in breaking up the antique theories, they unfortunately replaced them, in most instances by most ridiculous essays, and I have been able to find nothing regarding the subject of this paper in any of their writings.

At the commencement of the seventeenth century two brilliant men came upon the scene, whose methods serve as rules for the elevation of the human mind. Bacon did not have as direct an influence on medicine as did Descartes, but the latter, by replacing his own system for those in vogue before him left besides a method which will always be useful. Unfortunately, his contemporaries attached themselves more to his system than to his logic, and this system, which we must pass by in silence, almost immediately caused the birth of two medical sects, one of which, termed the Chemiatic, had Sylvius for its leader, and the other, termed the Iatromechanic, was represented by the illustrious Borelli.

We will leave aside those transformations which inflammatory diseases of the brain underwent at the hands of the Iatromechanicians; and as to those that it received at the hands of Sylvius, they are more important, and for this reason we will say a few words regarding them.

It may be said that the system of Sylvius occupies more space in his works than does medicine. He explains nothing and de-

scribes nothing excepting in his point of view. Giving up the old denominations, he completely remodeled the diseases of the brain, classified them, and explained them by the hypothesis of animal spirits. We would recall that these spirits, which were supposed to be seated in the blood, become separated from it when the latter enters the brain; the latter is merely the seat of this secretion. This fact once established, nothing was easier for Sylvius than to find the causes and the nature of diseases of the brain. Either this secretion was diminished or even *nil*, or else it was increased in quantity or changed in quality. The causes of each of these three conditions may reside either in a vicious condition of the blood or in an organic change of the brain. The blood might adhere too intimately to the spirits it contained, while on the other hand the brain might have its pores either too contracted or too dilated.

From this manner of explanation our author naturally was able to furnish six divisions, which for him were as many distinct affections (*Prax. med.*, Book I, chapter 41).

It would be a difficult matter to discover what might pertain to the subject of this paper in a like theory. In 1682 Willis, in his *De Anima brutorum*, came nearer to the real nature of things, although he was a partisan of the ideas of Sylvius. He admitted the phrensy as described by his predecessors, and explained it by a disturbance of the animal spirits, and according to him this perturbation was due to an irritation of the brain and its membranes, arising under the influence of the corrupted blood from sulphurous particles mixed with the spirits. On their side the irritated and swollen meninges pressed and compressed the periphery of the brain, and from this compression the shape of the pores of this organ became changed, and finally resulted in a complete disturbance in the secretion of the spirits. As will be seen, this is about the same explanation as is given by Sylvius.

Beside these discussions, which are more than often futile, Willis made a number of remarks which were full of truth relative to the effects of cerebral pressure and on certain organic lesions. In one part of his writings he makes the following statement: "Sometimes incurable and fatal cephalalgia arises after the formation of an abscess, a phlegmon, knots, or tubercles of the meninges."

The influence of the sect of which we have just spoken did not prevent certain observers of this epoch applying themselves entirely to the direct study of nature. Among these observers we find

the illustrious Theophile Bonnet, who relates several curious cases, but which, unfortunately, are insufficient in detail. I would mention the forty-sixth case which is found in the first book, section I, of his *Sepulchretum* as being one of tubercular meningitis. Some monographs have also quoted this phrase from him: "If water collects in the cranium it is difficult to recognize, because the head can hardly increase in size on account of the solidity of the bones."

Certain other curious passages may be found in the works of Pison and Wepfer, but their importance is not of sufficient weight to quote them here. As far as my knowledge goes, Sydenham has not left a single remark relative to phrensy, but on the other hand, a book appeared in 1689, from the pen of a certain Harris, entitled *De Morbis acutis infantum*. This writer, like Rhazes and Mercurialis, only includes in this work diseases peculiar to childhood, and it is he who relates that, having asked a celebrated physician why he had never written on diseases of the brain, received for reply that it was because he had never been able to cure them. Although a partisan of Sylvius, Harris studied nature directly, and it is most unfortunate that he has left nothing on diseases of the brain, unless it is the report of a case of fever with coma in which mercury was given successfully, and which perhaps depended on some affection of the brain.

We now come to the eighteenth century, and facts and reports of cases begin to increase in number, so much so that I shall be obliged in many cases to mention only the names of the authors, so that space will allow me to more extensively consider the most important works. Duverney the younger, in 1704, and J. L. Petit, in 1718, each presented the report of a case of hydrocephalus at the Academy of Science. That of the latter was most certainly chronic hydrocephalus as we understand it at the present day, but the one due to Duverney, which is extremely brief, is without any doubt an instance of tuberculous meningitis. The patient was a girl of from four to five years old who, during the progress of a cold, presented accidents of such gravity that death occurred within a fortnight. The autopsy showed a considerable quantity of clear, limpid serum in the ventricles, while the mesenteric glands were enlarged and cheesy, and consequently were in all probability tuberculous in nature. Sinclair's work, published in 1732, I have not been able to consult, but that from the pen of Paisley is referred to several times by Coindet in his work. In Paisley's case autopsy showed numerous minute cysts full of

small worms, situated under the parietal bone and covered with a thick, bloody mucus. The ventricles were distended by a yellow serum, and Paisley believed that the cysts were the glands of the dura mater obstructed by inflammatory products.

After these scattered observations and before going any further, it is necessary to expose the opinion of one of the greatest practitioners of the epoch. I refer to Boerhaave. Aphorism No. 1217 speaks of hydrocephalus, without, however, indicating whether it is an acute or chronic affection, and it is simply stated that the amount of the collection may vary. In No. 771 and the following will be found a definition of phrensy; it is, according to this authority, an acute febrile delirium, whose cause is an idiopathic affection of the brain. He also establishes a symptomatic variety. Pathologic anatomy revealed to him inflamed meninges and a gangrenous brain, or one reddened by ichorous matter. The symptomatic type of the affection resulted, according to him, from a transportation of the morbid matter to the meninges, from which an inflammation of these membranes resulted.

Frederic Hoffman, a practitioner quite as celebrated as Boerhaave, has written a chapter entitled *de Morbis infantum precipuis*, and also a clinical dissertation on children, but faithful to the method of his predecessors, he only treats of those diseases which are peculiar to early life. As to the way in which he understood phrensy, a description of phrenetic fever is to be found in his *Opera med. phys.*, and is produced by too great a quantity of blood, which has become arrested in its progress through the small arteries of the brain. By making phrensy a fever it will be seen that in Stoll he found a celebrated imitator.

In his *His. anat. med.*, Lieutaud mentions several cases of acute hydrocephalus, to which he applied the name of colluvies serosa, a term already employed by Pison. Sauvages, who first, in 1768, tried to form a natural classification of diseases, placed phrensy in febrile affections, with the various phlegmasies, while hydrocephalus he placed among spasms. Under the name of eclampsia ab hydrocephalo he without any doubt was the first to give a short, but a true and excellent, picture of tuberculous meningitis.

In 1761 the work of the great Morgagni appeared, and in the first letter, *De Doloze Capitis*, there is to be found the case of a three-year-old child who presented quite a marked collection of fluid in the ventricles. The author endeavors to discover whether this serum was the effect or the cause of the acute disease which

had killed the child, and he comes to the conclusion that both these opinions can be admitted. In the sixth letter there is an autopsy of a child who died a few days after presenting violent convulsions, and where was found a fluid collection in the ventricles. Besides the serum, Morgagni also found the gelatinous, translucent and greenish matter that is so frequently found in the interpeduncular space in cases of tuberculous meningitis. Morgagni, who always took as a guide the most exact observation of material facts, recognized that if it happens that inflammatory products are not found in subjects who have died from phrensy, a large number of other patients have, nevertheless, shown these changes; and in support of this statement he invoked the third case described in the fourth book of the *Sepulchretum*.

Such was the state of science at this epoch, when in 1768 appeared the celebrated treatise on hydrops of the brain, from the pen of Robert Whytt. Its influence was so great that it made almost every species of meningitis forgotten, and physicians in general commenced to study the disease in the sense that had been given to it by the English authority. That this monograph was certainly of enormous merit is shown from the fact that all writers coming afterwards adopted the periods established by its writer. The enumeration of symptoms and their description are almost complete. It is true that the pathological anatomy is brief and the serous collection within the ventricles, or at the periphery of the brain, is alone mentioned, as well as the curious fact of the non-coagulability of the liquid, which, says Whytt, is due to the fact that the meningeal arteries are much smaller in calibre than those belonging to the other serous membranes. He believes that the principal cause of the disease is the result of a defective relationship between the functions of the brain and those of the arteries, the latter bringing more liquid than can be taken in by the brain, and from which an extravasation of serum results. Compression of the brain, or a congestion of the organ, may produce this disturbance in the respective functions of the two orders of blood-vessels. The same circumstances may occur in chronic diseases, not only in the ventricles, but in the pleura, the pericardium, etc., but under these circumstances the liquid is not in sufficient quantity to give rise to symptoms of its presence. Whytt does not establish any variety in hydrops of the brain, either as regards the symptoms or the pathological anatomy.

As I have pointed out, from this time on acute hydrocephalus was reinstated and Fothergill has given it a few remarks in his

"Medical Observations and Inquiries." Like Whytt, he believes it is formed by a ventricular collection, but he differs from the former inasmuch as he attributes the cause to a rupture of a lymphatic vessel. His description adds practically nothing to what was already known other than he reports a case of the disease in an adult.

In 1774 some cases are reported by Ludwig, and at about the same time Dobson and Watson published some memoirs on the subject. Finally, in 1779 the first monograph on this question which appeared in French, was written by Odier of Geneva, and published in the memoirs of the Royal Academy of Medicine of Paris. Odier, familiar with the English writings on the question, also admitted a collection of fluid within the brain as characteristic of the disease, and besides a very complete and remarkable description of the symptoms. He was the first to consider by statistics the frequency of this affection and comes to the conclusion that from twelve to thirteen children died annually at Geneva from it. He did not divide the disease in several varieties, but the picture which he gives of it is without any question, of all that had been written up to that time, the best. He does not endeavor to explain the appearance of the collection, and merely notes its nearly constant presence, especially if the malady has been of some little duration.

In 1780, Quin of Dublin published his treatise on hydrops of the brain, and all that it is necessary to say is that he admitted the inflammatory nature of the disease. A work on diseases of children was published in 1784 by Underwood, and another, entitled "Essay on the Diseases Most Fatal to Infants," had been published in 1768 by Armstrong. This latter work is, I believe, the first which included acute hydrocephalus in a work on infantile pathology. Even at a later date Underwood had very summarily written on this subject, admitting that it was extremely obscure for him, but Armstrong, trying to throw some light upon it, quotes several cases, one of which was due to Hunter, and, like Dobson of Liverpool, he advises the use of mercury as being the only means of saving a few patients.

Before leaving the eighteenth century, it will not be useless to know how this subject was understood in some general treatises on pathology. In 1777, Cullen of Edinburgh and Stoll of Vienna gave to the medical world their medical works. Cullen's treatise adds little to the facts already known and, imitating Sauvages, he classified diseases into families and placed phrensy

in the ninth gender of the phlegmasies. At this time some effort had been made to distinguish inflammation of the brain from that of its membranes, and Cullen admits that these essays had led to no satisfactory result, and he consequently leaves inflammation of these two structures under the same denomination. By refusing to make the division of phrensy into cephalitis and meningitis, he admits another, which is founded on the causes and recognizes two kinds of phrensy, namely, the symptomatic and the idiopathic. The latter, according to him, is extremely rare and is peculiar, inasmuch as the symptoms appear at the same time as the fever, and he says that it corresponds to the true phrensy of Boerhaave and to the spontaneous cephalitis of Sauvages. As to the other type, he believes it is formed by several kinds, which he established by means of different circumstances, causes, complications, etc. As to the symptomatology, Cullen believed that there was no difference among all these varieties. If we now consider acute hydrocephalus, it will be seen that Cullen placed it among the neuroses under the name of hydrocephalic apoplexy, but at the same time he admitted that the classification was not a definitive one. The fact that he places it beside true apoplexy, by which he meant cerebral hemorrhage, which he also included among neuroses, leads me to suppose that he considered it as being of the same nature. According to him, the essence of these two affections is an interruption of the nervous influence which may arise from an external shock from an entirely different cause from that which destroys the mobility of the nervous system. Among the latter the afflux of blood in the cerebral vessels is the principal one, especially if a serous or bloody collection results. This afflux of blood may be the product of an active congestion, or it may owe its origin to a hindrance in the return of the venous blood. Hydrocephalus is the result of a sanguineous congestion followed by a collection of serum, thus explaining the nervous disturbances, and which in reality, for Cullen, is all the disease.

Following Hoffman's steps, Stoll treated phrensy in the same manner and, according to him, the cause and the seat of the disease varied, but, fearing to go too far, he defined the disease as an acute fever with delirium, as several of the older writers had done. But on the other hand, he thought that it might take on inflammatory or gastric characters. The first cases that he reports are, according to his way of thinking, phrenitic fevers of an inflammatory or bilious inflammatory nature. The question, however, arises as to how the affection reaches the brain when

it has these starting points, and he comes to the conclusion that it is only by sympathy or by the transport of the morbid matter to the brain. He also recognized two kinds of causes, which would lead one to believe that he admitted two varieties of the affection, one being sympathetic and the other metastatic; in the latter the metastasis was, so to speak, not complete, because the abdomen remained under the control of the morbid matter, a part of which only was carried to the brain. In considering fever as the principal phenomenon, it consequently results, he says, that there should be as many kinds of phrensies as there are fevers. And still more, the divisions given by authors he considered too narrow, because not only fevers, but affections of the primaviæ and nearly all morbid lesions may be accompanied by phrensy. From this we see that Stoll only considers phrensy as a symptom. The cases that he has reported include several instances of serous or purulent meningitis; the case of a sixteen-year-old child is particularly striking.

In his "Nosographie Philosophique," the first edition of which appeared in 1798, Pinel classifies meningitis in the group of serous phlegmasias, under the name of arachnoiditis. This authority quotes several of Stoll's remarks, and admits some of his ideas. He established a sympathetic or secondary arachnoiditis and an idiopathic type. The former he believed to be seated in the abdomen, while the latter he considered as located in the serous membranes of the brain. He made some effort to separate inflammation of the brain from that of its membranes, but refers in no way to acute hydrocephalus. I am unable to understand why certain authorities have said that Pinel had discussed this affection under the name of cerebral fever, because I have been unable to find any such reference in his works. Macbride is the only one at this time, as far as I am aware, that described it under the name of hydrocephalic fever. This was in 1772.

In a thesis upheld in 1804 by Herpin, a disciple of Pinel, we find the word meningitis for the first time and, as this work appeared some time before that of Senn, I believe that it must be admitted that Dr. Ruräh is in error when he attributes the use of this word for the first time to the distinguished clinician of Geneva.

From this time on it was generally conceded that meningitis was a disease of the membranes of the brain, and in this same thesis is to be found a consideration of the differential diagnosis of meningitis and encephalitis. Two years previously, in 1802,

a thesis on phrensy was upheld by Lavergne-Lacombe, who considers it more from Stoll's point of view than that of Pinel. He admitted three varieties, namely, the idiopathic, the sympathetic and the metastatic. The first form he believed to be rare in European climates, while the third form, he thought, accompanied essential fevers. The same year Peschier upheld a thesis which gives a rapid résumé of acute hydrocephalus in children.

In 1805, Baumes published his famous "Traité des Convulsions," but in this work one can detect the old ideas of Sylvius. The putrid, acid and glairy matters play a rôle in the convulsions of infancy, the latter being the most frequent. It is difficult to find in the midst of thick, acrid and viscid humors, spasms resulting from a pathologic change in the meninges. The end of the work contains a description of acute and chronic hydrocephalus, and it is stated that the former is nearly always accompanied in the beginning by violent convulsions. This is practically the extent of the description and is followed by the report of a case in a child 6 months old. I cannot believe that Baumes had read Whytt's book, which he quotes, however, in order to give the name of acute hydrocephalus to the case already mentioned, the duration of which was from 3 to 4 months in all probability, for the text is not quite clear on this point, but which was accompanied by hardly any of the symptoms pointed out by the English authority. The professor of Montpellier mentions the researches of Quin and Macbride, as well as those of Pinel, who, he says, treated the subject under the name of cerebral fever, but as I have pointed out, this must be a mistake. The same error has been made by Brachet.

As to the nature of the disease, Baumes believed that it was an inflammatory and spasmodic condition of the arachnoid, the spasm, as well as the inflammation, could suspend the absorbing action of the vessels and thus consequently produce a serous collection. In the chronic cases spasms played the principal part. In acute cases he considered the inflammatory condition as most important and he goes so far as to say that he was familiar with this form of the affection 20 years before Quin published his work. The description of an epidemic which raged at Lunel in 1780, which Baumes describes under the title of the autumnal fever of children, is certainly important, but it would appear to me that he was without doubt dealing with an epidemic of cerebral spinal meningitis. Unfortunately, no autopsies were made.

In 1806 Chardel presented a thesis on phrensy and simply col-

lects cases due to Rivière, Tissot, and Sauvages. The form of phrensy that was considered as due to intestinal disturbances he placed in the class of adynamic fevers.

In 1805 Vieusseux published a paper on an epidemic occurring in Geneva and related 8 cases, the majority being among children. The same epidemic was studied by Matthey, of Geneva, and both gave the same description of the symptoms, namely, a sudden commencement, weak pulse, headache, nausea, convulsions, and contractions. In the fatal cases coma occurred. The duration of the disease varied from 12 hours to 5 days. Naturally this was also an epidemic of cerebrospinal meningitis.

Matthey also published some researches on the distinctive characters of internal hydrocephalus and reported five cases. He upheld that the fluid collection was usually the result of the disease and not its cause, and pointed out as a characteristic symptom the expression of the patient and the general lassitude. The illustrious Laennec made some remarks on this paper, and, like the physician of Geneva, he admitted that the collection was not always the cause of the disease, while to the two symptoms already given he added a third, namely, dilatation of the pupils. He also pointed out how frequently tumors and tubercles of the brain are met with in cases of hydrocephalus.

In a work which appeared in 1809, entitled "Essay on hydrocephalus acutus," Cheyne attributed the disease to a venous congestion, probably dependent upon an increased arterial action. He believes that the word inflammation was wrongly applied when used to indicate this disease. The resulting fluid collection is derived from the venous congestion and would be rather favorable to putting a stop to the disease. He admitted the 3 periods of Whytt and classified under 3 heads the various forms of this affection. Autopsies had shown him a congestion of the vessels, adhesions of the meninges, and a more or less considerable amount of serous fluid, while the mesenteric glands were usually involved and the peritoneal surface of the liver covered with tubercles.

The same year Percival published 22 cases and the treatise on obstetrics of Burns, which also appeared at this time, is most curious to consult because this authority places meningitis and hydrocephalus side by side, and believes that they only differ by the intensity of the inflammation. For that matter this was the first work of the 19th century in which these two affections of infancy were put side by side, the description of which is, in my way of thinking, deserving of great merit.

In 1814 we have Bielt's thesis on frank meningitis observed in young subjects, and the same year Bricheteau presented his thesis on acute hydrocephalus. From this time on simple meningitis of children was nearly forgotten until about the middle of the century. Bricheteau defined hydrocephalus as a serous collection developing very rapidly in the brain, and he considered it as an essential acute hydrops, recognized that it often attacks scrofulous children, and that it may be complicated by phrensy.

We now come to the memoir which became notorious and was written by Coindet, it had for title, "Cephalite interne hydrocephalique." Published in 1817 this work contained a rapid description of cases of chronic hydrocephalus and the substantial history of the acute cases. These were either idiopathic, with a rapid evolution, or symptomatic with an obscure and irregular commencement. Both these varieties might be divided into three periods, but the difference between them was simply to be found in the first stage. The symptoms given were those already known, although nevertheless, Coindet added two others taken from the condition of the urine. This consists either in a white flaky liquid or else particles resembling mica. Authors of this time were not able to find these two sediments that the physician of Geneva mentioned as characteristic of the affection. According to him the idiopathic variety is the most infrequent, while, on the other hand, the symptomatic variety which is most frequent, may have its starting point in certain lesions of the brain or other viscera; or, on the other hand, they might be produced by sympathy.

When speaking of the pathologic anatomy he mentions these greenish-gray collections which had already been pointed out by Matthéy, as well as the ventricular collection which he does not consider a constituent of the disease, since it is not always met with, and that it occasionally exists in other affections, for example, in continued fever; the amount present will depend on the length of time that the affection has been present. The congestion of the cerebral vessels appears to him to be the result of the convulsions, but cysts may also be found as well as tumors of the brain, and likewise tubercles that may be met with in other viscera.

As to the etiology, the direct or unknown causes will usually give rise to idiopathic hydrocephalus.

The indirect causes, such as the various pyrexias, tumors, worms, metastases, will cause the appearance of the symptomatic type. Following a historical notice, which is added to his memoir,

he studies the nature of the disease which he above all attributes to an active inflammation when the hydrocephalus is of the essential type, and to a passive inflammation when it is of the consecutive form. This passive inflammation had for him a special mode of action, quite similar to that which occurs when serous collections arise in certain cavities following metastatic gout or the repercussion of darts maladies.

Carried away by the desire of giving a better understanding of this idea, he believes that this type of inflammation was the result of the particular seat of the irritation. The latter process, instead of inflaming the arterial capillaries, attacks the exhaling system. In this theory he consecrated the existence of simple meningitis, of which he recalls the purulent and pseudomembranous products, but he does not dip deeper into the subject. In its ensemble, Coindet's memoir is one of the best monographs that had been published on the subject. The description is both exact and true, but as to the theory, it is taken from Cheyne and Baumes. The establishment of a new manner of inflammation, that one explained by saying that it was made up of a nervous and an inflammatory element, or simply by the latter, according to the seat that it occupied, does not appear to me in any way contradictory to truth.

Brachet, of Lyons, having had the opportunity of treating acute hydrocephalus, studied the subject and published his results in 1818. His book, which was entitled "*Essai sur l'Hydrocephale*," came upon the scene at the time when the doctrines of irritation were at their maximum. He gives no place in the nosological order to hydrocephalus, because he wished to place himself as much as possible outside the influence of any system. He admitted the three periods of Whytt, but, limiting the subject, he was only desirous of studying as acute affections of the brain with the production of serum, those which in his mind were idiopathic. In spite of these independent tendencies he based himself on irritation more or less in order to establish two types of hydrocephalus, the first which he qualified as acute, the second, sub-acute; it is the latter form which had been more especially described by Whytt. In this class he introduces the cases reported by Duverney, Baumes and several of Petit and Matthey.

I must admit that I have been unable to make any very clear idea of this division. Then again, Brachet admits that hydrocephalitis of children may be either inflammatory, nervous or gastric, according to the predominance of the symptoms. And

still more, he endeavors to separate meningitis from acute hydrocephalus. This distinction appears to him an easy matter, but the differential diagnosis which he adds to his work seems to us of no practical use at the bedside, even in his day.

As to the nature of the disease itself, he believed it was due to a factor which irritated the cerebral lymphatics, and which resulted in a serous exhalation. The second stage of the disease is characterized by the compression which the brain undergoes, while the third represents the reaction of the organism to get rid of the products secreted. As to the true essence of the malady, the memoir appears to me far more logical than many of those which are written in former centuries, but perhaps this is due to the fact that the author wrote under the influence of what might be called almost modern ideas.

It is with regret that I am obliged to omit a certain number of other works, more especially those of Goelis, which appeared in 1820, Huschky in 1825, Jahn in 1819, etc. I would, however, call attention to a work which appeared in 1821 by Parent-Duchatelet and Martinet, and which had for title "*Recherches sur l'inflammation de l'arachnoïde*," in which the authors divided the disease into three periods, namely, the first of excitation, the second inflammation, and the third collapsus. They record numerous cases, some of which belong to acute hydrocephalus, the others to meningitis. The only difference that they remark in these various instances is based upon the seat of the affection, whose nature is quite identical, in their manner of thinking. Arachnitis is the basis and is all the more frequent the younger the age of the subject.

In a memoir on meningitis in children, Senn, of Geneva, professes the same opinion. According to him simple inflammation of the meninges, which simply means hydrocephalus in its older comprehension, is one and the same disease. Irritation causes the affection, while the ventricular collection is only of secondary importance, but which, in the second stage, might be produced by compression of the veins of the ventricles, the compression being produced by a thickening of the inflamed membranes. It should be recalled that at this epoch we are in the height of Broussais' reign. Other than this manner of considering this disease, which is due to the time at which his memoir was written, the remarks and the cases reported by Senn are full of interest. The first case that he relates is without doubt one of tuberculous meningitis, while the second, which might have been classed in hydrocephalus,

is, according to his manner of thinking, a meningitis of the base. The third and fourth cases are quite the same.

Without discussing individually the twelve cases which form the basis of his memoir, one can easily recognize, thanks to the author's exact and complete description, that he unites under the same title those affections which have been considered different by older physicians. In the remarks which follow the cases, this interesting sentence is to be found: "Peut-être cette maladie s'est-elle manifestée chez ce sujet, sous l'influence des mêmes causes que les tubercules."

As to the pathologic anatomy, one will find cited for the first time the presence of small granulations which a few years later acquired such great celebrity under the name of tubercles of the meninges. The only thing that Senn left untouched was to mention the relationship which existed between this pathologic production and the disease itself, and had he done so he would have taken away from Ruzs and Gerhard the honor of giving the first scientific description of tuberculous meningitis. Without any hesitation I would say that the work of Senn is the one which has advanced medicine in this particular disease more than any other that had been written up to this time. By pointing out for the first time the presence of granulations and the relationship which exists between meningitis and general tuberculosis, he forever prominently placed his name in the history of what was known at that time as acute hydrocephalus. It is true that some writers had already pointed out the co-existence of cerebral tubercles and an acute ventricular collection, but no one had gone as far as to connect the two lesions. Billard, who published his "Traité des maladies des enfants nouveau-nés" in 1828, confining himself to the works of Bricheteau, Guersant, Senn, etc., also considers meningitis and acute hydrocephalus as identical diseases.

Among the publications that followed those already mentioned, we would in the first place consider that written by Ruzs. This authority had already published several curious observations in 1833, and he divides with Gerhard the honor of having pointed out granulations of the meninges as being of a tuberculous nature. His thesis, which was presented in 1853, contains a complete history of acute hydrocephalus, which he attributes to miliary tubercles. Carried away by this idea he only saw tuberculous meningitis everywhere, and from this time on, ventricular collections and inflammatory products gave way completely in importance to tubercles of the meninges, and physicians who were

on the lookout for this lesion, no longer paid any attention to any other acute diseases of the cerebral membranes.

It must be said that before the thesis of Rufz, Charpentier had published a work in 1829, based on facts which he had collected at the Children's Hospital in Paris, in 1824, as well as in his private practice, but what is most astonishing is the fact that this authority pretends to have cured nearly all his patients, and we have simply spoken of him because his cases have frequently served as material for other memoirs. The name that he gave the disease was *meningo-cephalite de l'enfance*, and this term alone indicates the point of view from which he understood the question.

Under the same title, Piet upheld a thesis in 1836. This work was the résumé of twenty-six cases, and the cause for the affection is for him tubercles of the meninges. He, however, admitted having taken the history of two children dying from pulmonary phthisis, without acute symptoms, and the meninges were covered with tuberculous granulations. This author is not absolutely exclusive and does not include all those cases which formerly were termed acute hydrocephalus in the class of tuberculous meningitis. He admits an essential acute hydropsy of the brain, although he states that he has never seen a case, but he believes in it, and in this respect follows Guersant.

Hufeland, in the last work which appeared from his pen in 1836, considers acute hydrocephalus as an essential disease which may be either primary or secondary, and Schönlein, in his work on pathology and therapeutics which appeared in 1839, understood by the term of acute hydrocephalus, a particular affection which he classes in the neurophlogoses. This latter class is an inflammatory condition which he places beside phlegmasias and is characterized by a more rapid movement of the blood, venous congestion, an afflux of blood to the diseased organ, by a more energetic action of secretion in the affected organ, by the secreted products which may be pathologically changed, presenting more especially an albuminoid appearance which is never purulent; and lastly, by the constant coincidence subsisting between the acuity of the inflammation and the greater quantity of secreted products. At that time it was believed that in simple inflammation its intensity suspended the secretions rather than increased them and as soon as acute hydrocephalus was admitted to be a neurophlogose, all the phenomena arising were quite easily explained. Schönlein's description reproduces the same ideas as those of

Whytt, Coindet, etc. Besides hydrocephalus, Schönlein admitted an arachnoiditis that he classed among frank phlegmasias.

We now come to what may be called the more modern treatises on the diseases of children. Rillet and Barthez admitted an acute meningitis that they placed in the phlegmasias, as well as an acute hydrocephalus, which they classified among the hydropsies, and a tuberculous meningitis which was included in the chapters on tuberculosis in general. Their book, which is quite as remarkable from the authors' observation as well as its richness in material, appeared in 1843. It sums up and verifies all the notions that had previously been held regarding acute diseases of the meninges. These authorities conforming themselves to the constant division that they maintain in their work, divided meningitis into primary and secondary, and they recognized how few works had been undertaken on this variety and made the statement that they had only met with three certain cases of simple meningitis among the modern authors, and to these three they add one other observed by Legendre and five more that they personally treated. As in the case of meningitis, acute hydrocephalus may be either primary or secondary, and according to their way of thinking, consists in a rapid accumulation of serous fluid in the cranial cavity of non-inflammatory nature. They do not deny that examples of a primary type do not exist but they simply state they have not seen any. As to the secondary variety, they report three cases and it was in this class that they include those instances which the older writer called serous apoplexy. In their chapters on tuberculization, they study tuberculous meningitis under the term of secondary lesions that the meninges develop after the appearance of granulations. Under this heading they not only include cases of tubercles of the meninges but those in which the cerebral membranes present no change, unless it be a collection of serous fluid, but where tubercles in other viscera had been found. They also point out that all types of diseases that have been cited are frequently combined and it may be said that this great text-book practically contained, at the time of its first edition, all our modern theories of tuberculosis meningitis.

Bouchut's treatise on diseases of newly born children appeared in 1845; he upheld that tuberculosis meningitis was more infrequent than the simple form from birth to the age of thirty months and he inclines to the opinion of Guersant, who pretended that all forms of tuberculosis were more frequent during the periods of infancy.

In 1845 a new edition of Barrier's "Traite des Enfants" appeared, but the differences of opinion between this writer and Rilliet and Barthez do not appear to me of sufficient importance to discuss.

From what has been said in the foregoing pages it at once becomes evident that tuberculous meningitis has in reality been known from the earliest medical writings, and although it has oftentimes been seriously misunderstood, it nevertheless was without doubt a recognized affection among physicians of all ages.

871 BEACON STREET.

INFANTILE INTESTINAL DIVERTICULA.¹

BY

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(With plate and two illustrations.)

THE number of cases of diverticulum of the intestine which have been reported in medical literature is remarkably few, and leads to the belief in its rarity. For this reason, individual instances of its occurrence should be placed on record. Meckel, the great German anatomist, first demonstrated the diverticulum ilei, and from him it takes its name. Strasser has reported one case of this rare condition, and gives a table of sixty-three other cases collected from the literature.

These diverticula may take origin in almost any portion of the ileum, one being, perhaps, fifty inches remote from that of another case; but the majority of them appear to take origin at or about the junction of the jejunum and ileum. Here a pouch is formed in the vitelline duct, a remnant of embryonic structure. In one instance, the diverticulum ends in a blind pouch, and it may be attached to some portion of the interior abdominal wall, preferably at or near the umbilicus. In other instances it finds a fistulous exit above the umbilicus; then, again, others find a fistulous exit one or more inches below the umbilicus. But Hemmeter says in his treatise on diseases of the intestines: "In rare

¹Read at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists at St. Louis, Mo., Sept. 13-16, 1904.

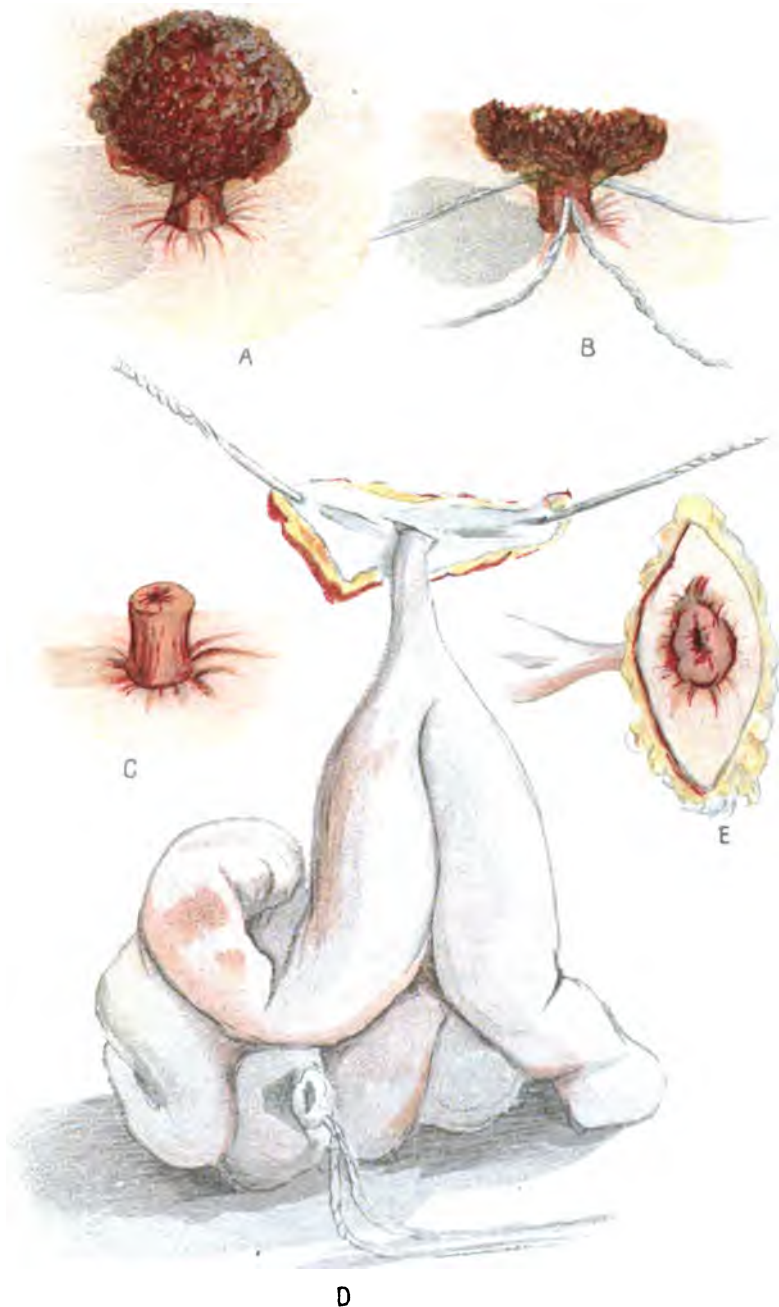
instances the diverticulum establishes open communication between the ileum and the external abdominal surface, at the umbilicus, through which the intestinal contents may escape." I report such a case.

The child was born of Swedish parents, both of whom were healthy; weight, nine pounds; under the care of a midwife. The unusual size and color of the cord at its umbilical junction led the midwife to tie it four inches distant. At the expiration of five days partial separation of the cord exposed a bleeding mass, and the parents, becoming alarmed, decided to summon other aid. The child appeared to be large and robust. The cord had separated sufficiently so that the retained meconium and blood escaped freely, after which the infant was more restful. Complete separation of the cord took place on the tenth day after birth. Then the appearance was that of a tumor, about the size of a large strawberry, red, granular and bleeding, with attachment by the apex. This tumor was quite firm, but compressible, and bled whenever touched; moreover, the contents of the bowels were forced through this umbilical opening whenever the child cried or strained. This large granular mass has been denominated by one or two writers as a hernia of the mucosa or submucosa through the muscularis of the intestine, which seems to be a very just and probable explanation of it.

After using local astringent applications for a few days, it became evident that the mass must be removed. The great restlessness of the child prior to the separation of the cord, and its evident relief after the discharges were free and unrestrained, caused some hesitation about ligating the mass. However, it was attempted by passing a double ligature through the base and tying half on each side. Hemorrhage ceased immediately. The tumor sloughed off in a few days, and in its place protruded a firm, whitish stem, one-half inch in length, the distal extremity of the duct, with umbilical tissues around it, giving it a clean surface; but the intestinal discharges continued through the umbilical opening as before. The parents objected to further operative interference until the child was older. However, the child died suddenly, when

EXPLANATION OF PLATE.

- A.—Appearance before operation.
- B.—Method of removal.
- C.—Appearance after removal.
- D.—Dissection after death.
- E.—Shrivelled appearance after death of the firm protruding portion.



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about four months old, of cholera infantum, and our plans were frustrated. How far delay was detrimental to the child's existence cannot be known, but we do know that abnormalities of the intestines threaten troubles of one kind or another, obstructive or inflammatory, sooner or later. Fitz (*Am. Journal Med. Sci.*, 1884, page 30) has called attention to the rôle played by this abnormality in the causation of obstruction, cyst formation and intestinal duplication.

Keating (*Cyclop. Dis. Children*) says, in the chapter on strangulations and incarcerations, the mechanism is pictured by which the Meckel diverticula may give rise to those forms of obstruction.

Dr. James E. Moore, of Minneapolis, has reported in the *New York Med. Journal*, April 25, 1896, a case of strangulated um-

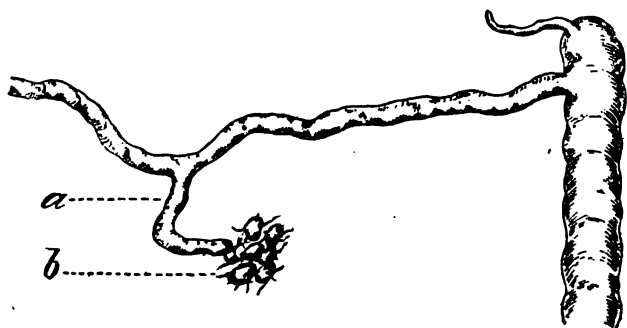


Fig. 1.—a. Meckel's diverticulum. b. Mass of enlarged mesenteric glands.

bilical hernia in a male infant seven months old. The hernial sac was composed of what seemed to be the remains of the umbilical cord, and the gut contained in it was a Meckel's diverticulum, about two and one-half inches long, with an opening in the extremity. Result of operation was an uninterrupted recovery.

Dr. George Tully Vaughn, U. S. Marine Hospital Service, reported a very interesting case (*N. Y. Medical Journal*, June, 1896) of a sailor in the Marine Hospital who died of enteric fever. At the necropsy the colon was found greatly distended with gas; ulcerated Peyer's patches and solitary glands were found in the ileum and cecum; the mesenteric glands and spleen were enlarged. One hundred and twenty-five centimeters (fifty inches) from the cecum a diverticulum was found projecting backward from the ileum and ending in a blind extremity, which was

attached by means of the mesentery to a mass of enlarged mesenteric glands. The diverticulum was slightly smaller in caliber than the ileum at its junction with that intestine. It extended from the ileum at right angles for five centimeters, at which point



Fig. 2.—Meckel's diverticulum.

it was bent at right angles on itself and extended two and one-half centimeters further; seven and one-half centimeters in all, as per diagram No. 1.

The interior of the diverticulum had apparently the same structures as the intestine to which it was attached. It contained two small swollen Peyer patches, and several enlarged and ulcerated solitary glands.

Dr. I. S. Stone (AM. JOUR. OBSTETRICS, August, 1903) reported a case of obstruction of the bowels, due to torsion of the mesentery and the presence of a Meckel's diverticulum. The case was that of a woman, 30 years old, who had suffered from repeated attacks of obstruction of the bowels since four years of age. Operation was successful. See diagram No. 2.

I have drawn attention to these cases of diverticula, because they have been found unexpectedly and unsought as complications in other intestinal cases. The very few cases of diverticula recorded, and the acknowledged danger to the patient's life when such a condition is present, leads us to the belief that many of the cases of so-called "inflammation of the bowels," "intussusception," "hernias," and other fatal bowel troubles have been, perhaps, only the sequel of unrecognized abnormalities of the intestines. The abnormalities may be latent for years, but they only await the fateful moment when right conditions invite their destructive work.

To conclude: 1. We find that the diverticulum ilei is more frequently found as a blind pouch attached or unattached to the interior abdominal wall or to the mesentery, but that it does, in rare cases, establish open communication between the ileum and the external abdominal surface, at the umbilicus, through which the intestinal contents may escape.

2. That it occurs more frequently in males.

3. That the accoucheur should always examine the cord carefully before and after separation, and tie far enough distant to not include any portion of the intestine which, perchance, might be protruding.

4. When the fistulous exit indicates the presence of a diverticulum, the safest way of treatment is the radical operation, and at as early a date as conditions will permit.

215 SCHERMERHORN STREET.

CHONDRODYSTROPHIA FETALIS.¹

BY

JOSEPH BROWN COOKE, M.D.,

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(With two illustrations.)

CHONDRODYSTROPHIA FETALIS, or *achondroplasia* as it is also designated, is, in this country at least, one of the rarest diseases that can affect the fetus in utero.

In Europe the disease may be more common, especially in its milder degrees, but as it has been confused with rickets and, less frequently, with sporadic cretinism, its literature is extremely meagre.

In the light of the recent investigations of Porak and Kaufmann, it may be said that the disease differs radically from rickets, and the observations of Symington and A. Thompson not only confirm this view but render it probable that the condition is distinct from cretinism as well. Riesman also agrees that the disease has very little in common with either rickets or cretinism, and that it differs from both in many essential points, but he admits that, like cretinism, it may be due to hypothyroidism.

The case I have to present to the Society is reported, not only because of its rarity, but because of the absolutely negative character of its etiology, which is, at best, probably the most obscure feature of this obscure condition.

CASE.—Male infant, born at 5 A.M., Thursday, May 21, 1903. The parents have been married two years and this is the first pregnancy, although they have taken no precautions against the occurrence of conception beyond refraining from intercourse during the days immediately preceding and following menstruation. They are both natives of this country and both come of old American stock, but there is no trace of consanguinity.

The father is 36 years old, in the prime of health, and there is no history of syphilis, tuberculosis, rickets or alcoholism. He is

¹Read before the New York Obstetrical Society at its May meeting, 1903.

a business man of means and position, and his responsibilities are great so that his life is, of necessity, carefully regulated.

The mother is 28 years of age and her personal history is likewise absolutely negative, with the exception of measles and whooping cough in childhood. She began to menstruate at fifteen years, the flow being of the 28-day type and lasting from 3 to 5 days. The amount of the flow has always been normal and she has never suffered pain or even discomfort at her periods.

The family history of both parents is negative as far back as it can be traced.

The last menstruation began October 10, 1902, lasting four days and was of the usual amount; the other symptoms of pregnancy appeared in their proper order and there was nothing at any time to suggest the slightest abnormality.

Quickening appeared in the first week of April, and this, confirming the calculation based upon the menstrual history, would have placed the date of the labor in the latter part of July.

Physical examination on April 20th showed heart, lungs, liver and spleen normal; breasts well developed, secreting colostrum, and with perfectly formed nipples. The abdomen was of the usual size and appearance, the fundus being 18 cm. above the symphysis pubis. The external pelvic measurements were normal, the diameters in centimeters being as follows: Ant. spines, 25; crests, 28; trochanters, 32; right oblique, 22; left oblique, 21; ext. conj., 20.5; post. spines, 8.5. A diagnosis of normal pelvis was made from these measurements and as no vaginal examination was made at this the true conjugate diameter was not estimated. When the labor occurred, however, it was evident that there were no pelvic abnormalities of any sort.

The fetal heart was heard distinctly in the left lower quadrant, the rate being 144. Fetal movements were active. The presentation and position were made out without difficulty through the abdominal wall and the case was clearly "L. O. A." This examination was made solely in the course of the routine management of the case; for the patient's condition was excellent from the first. Her urine was normal throughout, her appetite good and her diet generous and judiciously varied. She slept well, exercised freely in the open air, and was singularly free from the usual disorders of pregnancy. Her home surroundings were of the happiest, she was delighted with the prospect of having a child, and she had no cares or responsibilities of any sort.

On Tuesday morning, May 19th, I was called to the case and

the patient told me that on awakening she had found about an ounce of bright blood in the bed and that she was still bleeding slightly, although she had had no pain at any time and was at a loss to account for the hemorrhage.

I made an immediate examination and was relieved to find no evidences of placenta previa. The os was dilated sufficiently to admit one finger, the membranes were unruptured and tense and there was a hand lying against the left side of the head. The patient remained in bed under small doses of morphine and flowed slightly, but with no pain whatever, until 2 A.M. of Thursday,



Fig. 1.—Chondrodystrophia Fetalis. Author's Case.

May 21st, when labor began and she was delivered without assistance in three hours.

There must have been a condition of oligohydramnios, for the membranes were present and tense on Tuesday and ruptured and the os widely dilated at my second examination on Thursday, yet neither the patient nor the nurse had any knowledge of an escape of amniotic fluid during this time nor was there any evidence of it in the bed or on the pads.

The umbilical cord encircled the neck three times, the last loop passing over the left hand of the fetus and binding it loosely down to the head. The coils were not tight, the circulation in the

cord was good and it was cut between ligatures. The bones of the extended arm were so soft that it offered no obstruction to delivery, and the distended abdomen caused no trouble whatever. The abdominal tumor was thought at the time to be bladder, and this afterward proved to be the case. No liquor amnii followed the expulsion of the child, and there was very little bleeding. The placenta was delivered spontaneously in twenty minutes and was apparently normal, but I regret to say that it was destroyed by the nurse. The child gasped a few times and made a faint cry,



Fig. 2.—Chondrodystrophia Fetalis. Author's Case.

but the ribs, which felt like fibrous cords under the skin were so soft that it could not expand its chest to any appreciable extent. The heart continued to beat for about half an hour.

The general appearance of the child is well shown in the photographs. The large body; the distended abdomen; the legs curved and symmetrically shortened to only about half their proper length; the joints enlarged, and, in the lower limbs, partially ankylosed; the over-size of the head with softening of the cranial bones; and the thickening of the entire cutaneous surface so that it lies in folds in many places, are all characteristic of the disease. Macroglossia is usually present to a certain degree and probably

has much to do with the supposed relationship between chondrodystrophia and cretinism but it was absent in this case.

The pelvis was markedly underdeveloped, the tip of the sacrum and the coccyx being tilted upward and forward and the sides pushed in until the outlet was apparently entirely closed. The penis was small, slightly edematous, and the urethra seemed to be entirely absent or represented only by a fibrous cord. The only evidence of a scrotum was two small folds of integument at the base of the penis. The nates were wholly undeveloped, the surface at the base of the pelvis being perfectly flat and apparently entirely bony with complete obliteration, or else marked distortion and enlargement of the ischia. There was not only no anus but no rudimentary dimple to mark its site.

The legs were symmetrically shortened to about half their length, so that the umbilicus was distinctly below the middle of the body, markedly curved, and the bones were extremely brittle, while the arms were of the usual length and the bones, specially of the hands, as soft as cartilage. In one of the photographs (Fig. 1) the pressure mark made by the umbilical cord as it bound the cartilaginous left hand down to the head is plainly seen.

As this disease is one that begins and completes its evolution in the early months of pregnancy so that, at birth, the lesions are usually cured, it is fair to assume that, in this case at least, the process began in the bones of the pelvis and lower extremities, which, after undergoing the preliminary extraordinary softening due to the refusal of the cartilaginous cells to calcify and their disintegration and absorption by the osteoblasts and osteoclasts, became stunted and distorted and then ossified in their present condition. The process, meanwhile, had extended to the ribs and upper extremities but had not reached the stage of calcification at the time of birth. Whether or not the infant was at full term is a matter of some doubt. The entire history and the height of the fundus point to a seven months' pregnancy, but the small size of the uterus may have been due to the oligohydramnios. The fetus itself was well covered with lanugo which would indicate prematurity, but in other respects it had all the characteristics of a full-term child.

Inasmuch as the dystrophia always affects the lower limbs more severely and stunts them to a greater degree than the upper, it may reasonably be supposed that this is the usual course of the disease,—that is, from the lower to the upper extremities. There was no pseudo-rhachitic rosary in this case because the disease had not

progressed in the ribs to a point where this development would appear, the thickening of the ends of the ribs in chondrodystrophia being due to the formation of an osseous ring and not to an overgrowth of cartilage, as in rickets. The cranial bones, also, were apparently normal, in distinct contrast to the hypertrophic areas and craniotabes found in rickets, and the enlargement of the head was due to the thickened cutaneous tissue coupled with a considerable degree of edema, probably of the nature of caput succedaneum.

A complete autopsy was not allowed, but the abdomen was opened and the following conditions found: There was no fluid in the peritoneal cavity, the distention being due to bladder. There was but one kidney, on the right side, the ureter being long, dilated and tortuous and leading to the left side of the bladder. The ureter from the right side of the bladder was long, greatly dilated from back pressure, and ended in a small cyst about the size of a grape, lying loose in the abdominal cavity. The bladder was sacculated and had apparently been twisted on itself and there was no evidence of any urethra whatever. The intestine contained no trace of meconium, but was filled with a yellowish-white, flocculent fluid. The rectum was entirely absent, the colon ending in a blind pouch attached to the bladder.

As permission could not be obtained for the removal of any tissues for microscopical examination, nor for the opening of the other cavities of the body, the results of the autopsy cannot be regarded as at all satisfactory.

240 WEST 138TH STREET.

A CASE OF INDIRECT TRAUMATIC RUPTURE OF THE
UTERUS IN THE EIGHTH MONTH OF PREGNANCY.
AMPUTATION OF THE UTERUS. RECOVERY.¹

BY

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Mercy, Wesley, Provident, Cook County Hospitals, and the Chicago
Lying-in Hospital and Dispensary.

(With two illustrations.)

Mrs. D., age 40; XIV para; colored. Menstruated at 13 years; painful till after first labor. Patient has had six abortions in the fourth, fifth, sixth and seventh months, each succeeding abortion being later than the last. Her labors were natural. Careful inquiry elicits no history of operations on the uterus. Previous illnesses none but mumps. Husband always well. No history of syphilis. Last menses Dec. 15, 1903. June 20, 1904, about the eighth month of pregnancy, patient fell through a broken stair, the body falling till the protuberant abdomen was arrested by the narrow opening. There was considerable pain but the patient extricated herself and walked half a mile to a cousin's. She was taken sick at her stomach, which she ascribed to something eaten, and had severe abdominal pain. She walked home and fell fainting on the bed. Consciousness was lost and the patient's mind was not clear for four weeks.

Hemorrhage appeared and a local physician diagnosed placenta previa. He sent her to the Provident Hospital, where she arrived June 21st, at eight A.M. For the following history I am indebted to the interne, Dr. McDowell.

The patient entered the hospital in great pain, her clothes being saturated with blood. The abdomen was tense but not tender and palpation revealed a tumor mass high up near the ensiform and contracting. Head near pelvis.

Vaginally.—Cervix admitted one finger and the membranes were felt adherent firmly all round. Head palpable inside membranes. No placenta palpable.

¹ Read before the Chicago Gynecological Society, Sept. 23, 1904.

Bromides and an opiate brought the patient only slight relief from the severe pains. The bleeding was profuse and the patient showed the symptoms of shock and internal hemorrhage. A tampon was inserted. The pains subsided.

Twenty-eight hours later the tampon was removed. The patient was now free from pain, and the hemorrhage had ceased. She rallied somewhat with stimulation and salt solution. Soon the belly began to distend, pain recommenced and tenderness over the abdomen became marked.

I examined the patient now for the first time. She was in a critical condition, the mucous surfaces and the palms of the hands being markedly blanched. Pulse 128, weak. Respirations 36. Temperature 99.8. Cold sweat. Extreme prostration. Picture of internal hemorrhage.

Abdomen much distended and too tender for successful palpation. Dulness determined in right flank.

Vaginally.—Cervix admitted two fingers, but I could feel nothing over internal os. Examination unsatisfactory because so painful to patient. A diagnosis was made of premature detachment of the normally implanted placenta with possible rupture of the uterus and intra-abdominal hemorrhage.

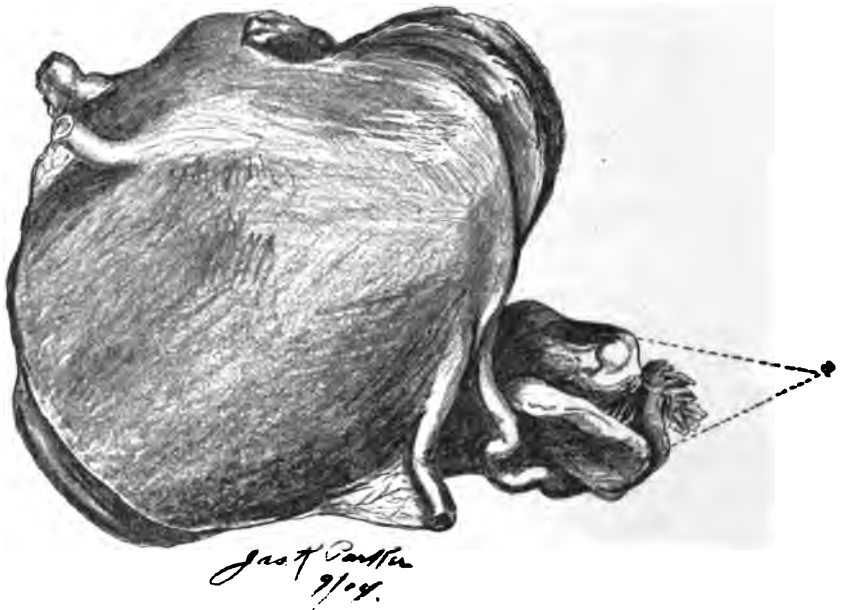
Within thirty minutes the operation was performed. On opening the abdomen free blood escaped in large amounts and directly under the incision lay the placenta and membranes complete, and containing the fetus. This was rapidly delivered intact and search made for the rupture. An opening was found in the fundus uteri on the posterior surface. The uterus was here torn directly across and its cavity was completely empty. Amputation at the cervix was performed, the stump covered with peritoneum and the abdomen closed without drainage. The patient was septic at this time, for the writer had two infected needle pricks on the fingers within 12 hours.

The patient developed fever and the abdominal wound parted, exposing the intestines. After five days, exudate was found in Douglas' cul-de-sac. Free drainage was made under ethyl chloride anesthesia, about four ounces of cloudy serum being evacuated through the vaginal incision. Gauze was packed around the cervix on both sides.

The patient ran a course of fever and delirium for several weeks. The discharge from the vaginal opening soon ceased. About the fourth week three tiny necrotic areas appeared on the exposed gut and soon an intestinal fistula complicated the

convalescence. These fistulæ were high up, as almost pure bile escaped. An eczema developed on the surrounding skin and the patient began to emaciate rapidly. An attempt to close the fistulæ was partly successful. The openings were coapted by mattress sutures and the freshened edges of the skin were united by silk worm gut. Two of the fistulæ closed and the largest one has diminished so much in caliber that very little intestinal content escapes. The patient is recovering.

Description of the Specimen.—The fetal sac containing the intact ovum presents nothing unusual. The pregnancy was one of about seven and a half months. The child shows the first evi-



Front view of uterus showing site of rupture at top. a. Ovary cut open showing corpus luteum.

dences of maceration. The removed uterus shows a rather high amputation at the cervix. The placental site is apparently on the posterior wall. The preserved specimen does not show this, but the course of the round ligaments on the anterior wall is confirmatory evidence.

Across the left half of the fundus, just behind the insertion of the tube is a long jagged opening in the uterus, with bloody everted margins. The peritoneum breaks off sharply at the edge, showing that it has not been lifted up from the muscle. The

wall is only 1 cm. thick here, while elsewhere it is $1\frac{1}{2}$ to 2 cm. thick. The rent takes in two-thirds of the posterior wall of the uterus, and runs a little forward at the left end. The left tube is much convoluted and somewhat thickened. The left ovary is enlarged, contains the corpus luteum, and is adherent to the posterior surface of the uterus by broad adhesions. The right ovary and tube were used to cover the stump at the operation.

Rupture of the uterus is a rare accident of pregnancy. A dis-



Rear view of uterus. Glass rod holds walls apart showing rupture at fundus.

inction can hardly be made between spontaneous and traumatic ruptures of the uterus. A purely spontaneous rupture of the uterus can only occur by gradual over-distention of a diseased or malformed uterus, as in interstitial pregnancy. Indeed, the occurrence of a spontaneous rupture is excessively rare, as a sufficient trauma is almost always determinable to have preceded it.

Krukenberg¹ collected 13 cases of rupture of the uterus after Cesarean section, four of which occurred during pregnancy, apparently without traumatism. It is difficult to understand how the growing ovum can spontaneously burst through the uterus unless there exists grave alteration of its structure, *e.g.*, carcinoma, tu-

berculosis, growths of the myometrium or the placenta (hydatid mole).

Baisch² collected 78 cases of *ruptura uteri* during pregnancy. He divides them into traumatic and spontaneous, including in the first only those due to direct trauma, as perforation in criminal abortion. 'To me it seems that the ruptures of the uterus during pregnancy should be divided into spontaneous and traumatic, and the latter into two groups, first, those due to direct penetrating injury, and, second, those occurring indirectly from fall or blow.

Under the head of simple spontaneous rupture we would have the four cases of Cesarean section with yielding of the scar; rupture of uterus after gynecologic operations performed on it; or after previous rupture³ of a single or double-horned uterus; rupture of interstitial pregnancy; the giving of a carcinomatous uterus; of the uterine wall perforated by a hydatid mole or one having become malignant; pathologic thinning of the uterus; fatty degeneration (not proven); injury to the uterus by previous manual removal of placenta. Mikhine⁴ collected 13 cases of rupture of the uterus for the second time, 1 case for the third time and 1 case for the fourth time in the same woman. Smauch⁵ reports a case of gradual yielding of the scar of a previous rupture while preparations were being hurried for Cesarean section.

Examples of direct traumatism are puncture of the uterus by sounds,⁶ cures or other implements used to produce abortion; by bullet;⁷ by the horns of steers.⁸ Indirect traumatism is most frequently the cause and one need not always demand the existence of a pathologic condition of the uterine wall. Such indirect injuries are: falling on the buttocks,¹⁰ falling against objects, *e.g.*, a table; lifting a weight and leaning backward,¹¹ straining at stool and vomiting.¹²

That the uterus can be severely shaken up and not ruptured is shown by the case of Hofmeier,¹³ where the woman fell from a fourth story window without rupture. Veit¹⁴ believes that the rupture cannot occur when the uterus is relaxed, but only on the occasion of a contraction (pains of pregnancy). It is, of course, natural that if the wall of the uterus is diseased or thinned, any indirect trauma is more likely to produce a rupture.

Pathology.—The structure of the uterus in the neighborhood of the tear shows the signs of a bruising separation of tissues; suggillation, minute hemorrhages, edema, thrombosed vessels, white-celled infiltration. In addition some writers have described what they consider to have bearing on the production of rupture.

Herzfeld,¹¹ Leopold,¹⁰ and Jellinghaus¹² say that the uterine wall may be thinned by removal of portions during curettage or manual removal of the placenta. Poroschin¹³ finds the elastic fibers of the uterus diminished in amount, they are not woven together as usual; they are zigzag, not spiral, and irregularly thickened; they do not stain as normal fibers. Poroschin says that this is an evidence of senility (his case was an XI para, aet. 45), and quotes Dührssen, who found in senile uteri a diminution of the elastic fibers.

Leopold, whose case had gone to term, found no characteristic changes save that many hairs (lanugo) were imbedded in the uterine scar. Jellinghaus¹² found no real pathologic condition save thinning of the wall. Fatty degeneration was not found, but many authors pre-suppose its presence. Mikhine,⁴ in a fresh preparation, found no changes that would explain the rupture.

Prof. Robert Zeit, of the Northwestern University Medical School, made sections of this uterus. I quote his report:

The ruptured area was in a portion of the wall much thinner than any other part; in fact, there is a localized atrophy about the ruptured area of the fundus. The microscope shows edema, rhexis, much small-celled infiltration in areas, thickened vessel walls. The muscularis of the fundus shows more or less degeneration, cloudy swelling, indistinct nuclei, and in some portions necrotic denucleated involuntary muscle fibres, and atrophic cells.

With the exception of the hemorrhagic infiltration and the thinning of the uterine wall, all these changes may be explained by involution of the uterus, as it had expelled its contents into the peritoneal cavity some time before it was removed.

The site of the rupture, contrary to that usual during labor in pregnancy, is found at or near the fundus. Gebhard,¹⁴ says the atrophic areas are usually in the fundus near the tubal insertions. In my case it was transverse, in Herzfeld's longitudinal. The rupture may be complete; *i.e.*, into the peritoneal cavity or incomplete, leaving the serosa intact (Poroschin). The latter is rarer. It is probable that most ruptures are at first incomplete, the fetus being forced through the peritoneum by the uterine contractions (Herzfeld, Jellinghaus, Leopold, De Lee).

The fetus almost always dies from detachment of the placenta, or by its extrusion from the uterus. In Leopold's case the child continued to live in a new sac formed about it by the abdominal viscera, obtaining its nourishment through the cord which led through a slit in the uterus to the placenta inside. Henrotin¹⁷

reports a similar case. In one case reported by Hindle¹⁸ a partial rupture resulted from a fall four days before labor, and during labor the tear became complete.

Clinical Course.—The clinical course of the cases is from bad to worse, and unless aid is rendered, all the women die. This paper does not consider injuries to the uterus the result of direct trauma, as instrumental perforations, bullet wounds, etc., but is limited to the purely spontaneous ruptures and those produced by indirect violence, as the case reported.

Succeeding the injury there is always pain in the abdomen. This may subside completely as in Hindle's case, and recommence when labor begins, but usually the uterus at once begins to act and pain accompanies its efforts to expel the ovum into the abdomen. The rupture is thus completed and the pain disappears until the beginning of peritonitis. The presence of the fetus in the peritoneal cavity causes pain, as in Leopold's and Henrotin's cases with live fetuses, and Schroeder's¹⁹ and Herzfeld's and De Lee's with a dead ovum.

Shock more or less pronounced was present in all cases, and as internal hemorrhage progressed the condition of the patient grew worse. Even with moderate hemorrhage the prostration was marked in most cases.

Vomiting was usually present as an initial symptom and persisted more or less with other symptoms of peritoneal irritation, *e.g.*, hiccup. The bowels are usually free, but in one case, Herzfeld's, owing to the difficulty in getting them to move, the condition was hidden for a time under the picture of intestinal obstruction.

Peritonitis always supervenes when the child dies, and unless operation is done early the patient succumbs as a result of the infection.

The cases of Leopold and Henrotin where gestation continued after the fetus had escaped among the intestines must be considered as entirely exceptional and offer no guide to treatment.

The hemorrhage may be internal or external or both. The amount of hemorrhage depends on the rapidity of the tearing, the site of the rupture and the site of the placenta. The fetus may tampon the rent. External bleeding may not occur till after the fetus is free in the abdomen. A hematoma rarely forms, because the ruptures are usually fundal, and the peritoneum is here firmly adherent to the muscle.

Labor pains soon begin unless the fetus is at once forced out

into the abdomen. If, as is the rule, the uterus only tears partly, the pains force the ovum against the weak spot and thus tear it wider, until it allows the passage of the child. While this is taking place a bag of waters may also form over the internal os, the cervix may dilate and the child descend in the pelvis. It may be delivered before the rupture of the uterus is completed (Jellinghaus). More commonly the cervix offers more resistance than the weakened uterine wall and the child is forced out in the direction of the abdominal cavity.

In the case I report to-night the sequence of events probably was as follows: As a result of the fall an injury of the uterine fundus occurred, which was attended with some separation of the placenta. This was evidenced by the severe external hemorrhage. The pains, which soon commenced, forced the ovum into the uterine rent and stopped the internal hemorrhage. When the child escaped into the abdomen the uterus contracted fully and all the hemorrhage ceased. The woman rallied till the beginning peritonitis caused symptoms which induced the interne to send for me.

Diagnosis.—This is usually difficult, and in nearly all of the cases was made only at the time of operation. To be considered are:

1. Torsion of a tumor near uterus.
2. Rupture of liver or spleen.
3. Ileus.
4. Ruptured extra-uterine pregnancy.
5. Rupture of uterus.
6. Detachment of the placenta.
7. Placenta previa.

The treatment is, without question, laparotomy as soon as the diagnosis is made. Even if the diagnosis is only probable the abdominal section is justified.

34 WASHINGTON STREET.

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CONSERVATISM IN PELVIC SURGERY.¹

BY

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A THOUGHTFUL conservatism in operative procedures, when dealing with pathological conditions of the female organs of generation has fortunately become the rule in the majority of surgical clinics. And more particularly is this likely to be the practice where the surgeon in charge has kept in touch with the progress that has been made from this standpoint and from his own experience and that of others has learned to appreciate the advantages of conservative procedures in the treatment of pelvic inflammatory disease. There still remain, however, operators who believe it to be their duty to resort to extreme measures when dealing with the pathological conditions of the tubes and ovaries, although the same men often favor more conservative procedures when they encounter general surgical abnormalities. Now, with few exceptions, the so-called cystic or cirrhotic ovary is still capable of performing its functions and when the organ is bound down by adhesions, the symptoms are apt to be mainly due to their presence. Hence, in the restricted sense of the term, the condition of such organs is not pathological, and when they have been removed under these circumstances they seldom, if

¹Read before the Ohio State Medical Society at Cleveland, May 18th, 1904.

ever, show any evidences of inflammation even upon microscopical examination.

But even when the ovaries or tubes have undergone actual inflammatory changes, or where they are occupied by tumor formations, or are bound down by adhesions so that their functions are interfered with and the necessity for operative procedures becomes imperative, we still have to decide how far we ought to go and how we can get the best results for the patient not only immediately but later on. After an experience of more than five years in the application of conservative measures in various forms of pelvic abnormalities, we have been able to thoroughly convince ourselves of the great advantages that may be obtained by preserving as far as possible the integrity of the pelvic organs. It is true that in a small percentage of cases, after such a line of treatment has been followed, the patient will still have to undergo a second operation before she can be completely relieved of her discomfort, and it is also possible that in a few instances, by the introduction of infection under these circumstances, her condition may be rendered even worse. Such cases are exceptional, however, in our experience.

Before choosing the more conservative operative procedure, we always make it the rule to carefully explain to the patient, or to her friends, that such measures will be carried out if in our judgment at the time of the operation they seem to be advisable. But we further state that even though we remove what seems to be the inflammatory area, it may later become necessary to institute a second operation, before relief is obtained. In the great majority of instances, the patients are perfectly willing to take a good many chances if there is a reasonable prospect that the conservation of the pelvic organs will be compatible with future health and comfort, and from actual observation we have found that it does not become necessary to perform a second operation in more than from three to five per cent. of all such cases. If an ovary or a portion of an ovary can be saved, before the normal menopause has begun, or even during the time in which the patient is experiencing these changes, we have found that not only the immediate convalescence, but also the subsequent condition of the patient is in every way more satisfactory.

Anyone that has cared for patients that have had their ovaries removed (even though diseased) can testify to the fact that many of them suffer more or less acutely for varying periods of time,

following the operation, in some instances as long as five years. And unfortunately during this time the morphine or some other drug habit may be formed in endeavors to relieve their distress. The prevention of the artificial menopause is the most important reason for leaving the patient her ovaries whenever this is possible, the question of possible pregnancy following conservative measures being in our opinion only of secondary importance, as in the majority of these cases, the patients are in an unhealthy condition for the bringing of a child into the world. This criticism, of course, does not usually apply to those cases in which a tumor is present, implicating only one ovary. Where the question of pregnancy is to be considered, one has to deal with the condition of the Fallopian tubes, as well as that of the ovaries.

The various methods to be employed in these conservative operative measures when dealing with the tubes and ovaries are well known to everyone and a description of them would prove to be merely a tiresome repetition. I would say, however, that in the light of our experience it is a wiser procedure to remove the Fallopian tube whenever a pyosalpinx exists, *i.e.*, where there are macroscopical evidences of pus. When, however, the ovary is involved in an abscess formation, the same radical treatment is not always indicated, as the abscess in most instances does not involve all of the ovarian stroma. Moreover, microscopical examination of many of these ovaries will show that the abscess is walled off, and the ovarian stroma beneath is frequently invaded only to a slight extent. In such instances the abscess may be excised and the line of incision be brought together with a fine silk or catgut suture.

I shall now give a brief analysis of the work in this line carried out in the Gynecological Department of the Lakeside Hospital during the past five years. I wish to acknowledge the valuable assistance of Dr. Howard Dittrick, the Resident Gynecologist, and Dr. Wm. T. Abbott, the First Assistant Gynecological Intern to the Lakeside Hospital, in the preparation of the analytical tables. In all the cases considered the lateral structures showed macroscopically marked evidences of inflammatory disease, and there were adhesions which bound down the structures. We have only included in this analysis those cases in which we were able to carry out conservative measures, and not those in which we were obliged, on account of the technical difficulties of the operation, to leave the lateral structures in on one or both sides, although removal was indicated.

ANALYSIS OF CASES.

Total number, 237. Age: The oldest patient was 52; the youngest 17 years of age. Average age, 28-12 years. Five were 17; six were 18; nine were 19; eight were 20; twelve were 21; thirteen were 22; twenty were 23; nineteen were 24; fourteen were 25; nine were 26; eight were 27; eighteen were 28; eight were 29; fourteen were 30; four were 31; six were 32; ten were 33; four were 34; seven were 35; three were 36; three were 37; six were 38; four were 39; five were 40; four were 41; three were 42; two were 44; one was 45; three were 46; two were 47; two were 48; one was 49; one was 50; two were 52. The majority of the patients were between 17 and 30 years of age.

Menstrual History.—The menstrual history was abnormal in 169, and normal in 68 cases. The menopause had taken place in one. The symptoms presented in the abnormal cases in most instances were those of dysmenorrhea, menorrhagia, prolonged and irregular flow.

Leucorrhea.—One hundred and seventy-six patients gave a history of a leucorrheal discharge. Of these patients, 124 were married, 38 were single, and 14 widowed.

Married Life.—165 were married; 53 were single; 20 were widows. Longest time married, 28 years; shortest time married, three months. Of the 165 married, 115 had borne children. The total number of children borne by the 115 patients was 271, the average being 1.12 per cent. The greatest number of children borne by one patient was 11. The next greatest number was 9. Still-born children, 2. Twins, 1. Women having borne one child, 51; 2 children, 21; 3 children, 12; 4 children, 13; 5 children, 4; 6 children, 5; 7 children, 2; 9 children, 2; 11 children, 1.

A history of infection following labor was recorded in 40 cases. Instrumental delivery was followed by infection in 13 cases. The total number in which there was a history of infection following labor, 53.

Miscarriages.—Number of patients having had miscarriages, 103; number of miscarriages, 172; married, 83; single, 10; widowed, 10. Abortions or miscarriages had been induced in 52 cases; in the married patients, 34; in single patients, 10; in widows, 8; patients having had one miscarriage, 65; two miscarriages, 22; three miscarriages, 13; four miscarriages, 1; five miscarriages, 1; six miscarriages, 1; seven miscarriages, 1. Infection following a miscarriage had occurred in 42.

Gonorrheal Infection.—In 51 patients there was a history of gonorrheal infection; positive in 32; probable in 19. Of these 28 were married; 19 single, and four widowed.

Among the married the history was positive in 16, probable in 12, and in one was complicated with syphilis.

Among the single the history was positive in 15, and probable in 4 cases. Among the widows, positive in one case, and probable in three.

A positive history of a specific infection is generally difficult to obtain, and unless the infection can be surely proven, we are not justified in making positive deductions from this standpoint. It will be seen from a study of the cases of labors and miscarriages, that infection in these instances plays a very important part in the causation of inflammatory diseases of the tubes and ovaries. Thus, there were 53 cases of infection following labor and 42 following miscarriage—in all 95 cases.

Bowels.—In 73 cases there was a history of constipation. Forty-seven of the patients were married; 14 were single; 12 widowed.

Micturition.—There was some complaint with this function in 124 cases. Ninety of the patients being married, 23 single; 11 widowed.

The general condition was good in 138 cases; in 82 fair; and poor in 17.

The uterus was adherent in 121 cases. Eighty-six of the patients were married; 29 single; 6 widowed.

The bowels were adherent in 165 cases. One hundred and ten of the patients were married; 42 were single; 13 were widowed.

The vermiform appendix was removed in 113 cases. Married, 80; single, 23; widows, 10. In 56 married patients it was adherent; in 14 reflexed; in one occluded; in 9 hypertrophied. Single: adherent, 18; flexed, 3; occluded, 1; hypertrophied, 1. Widows: adherent, 8; occluded, 1; hypertrophied, 1.

It was adherent and not removed in two cases on account of an extreme condition of shock after removal of the pelvic structures. One of the patients was married, the other single.

The appendix was adherent in	82 cases
“ “ “ flexed in	17 “
“ “ “ occluded in	3 “
“ “ “ hypertrophied in	11 “

STRUCTURES SAVED.

Ovaries:

Right	93
Left	76
Both (47 times or)	94
Right (partial)	17
Left (partial)	17
Both (partial)	3
Both ovaries with tubes 17 times or ...	34

 334

This number was saved in 237 cases, a little over one ovary and a third to each patient.

Tubes:

Right	17
Left	25
Both 25 times	50
Right (partial)	15
Left (partial)	11
Both (partial)	
5 times or	10

Total 128 in 237 cases, or a little more than one tube to each patient.

STRUCTURES SAVED IN THE PUS CASES.

Pus was met with in 64 cases out of 237, or in 26.62 per cent. They were divided as follows:

Married	36
Single	22
Widow	6

 64

The pus was found as follows:

Double pyosalpinx:

Married	22
Single	5
Widow	3

 30

Single pyosalpinx:

Married	7
Single	5
Widow	1
	<hr/>
	13

Tubo-ovarian abscess with pyosalpinx (single):

Married	6
Single	1
Widow	0
	<hr/>
	7

Tubo-ovarian abscess (double):

Married	0
Single	8
Widow	0
	<hr/>
	8

Tubo-ovarian abscess (single):

Married	1
Single	2
Widow	1
	<hr/>
	4

Ovarian abscess (double):

Married	0
Single	1
Widow	1
	<hr/>
	2

STRUCTURES SAVED IN PUS CASES.

<i>Ovaries.</i>		<i>Tubes.</i>	
Right	27	Right	5
Left	15	Left	2
Both 12 times, or	24	Right (partial)	2
Right (partial)	4	Both (partial)	2
Left (partial)	2		<hr/>
	<hr/>		11
	72		

Thus 72 ovaries were saved in 64 pus cases, or about one and a fifth ovary to each patient. In 12 cases both ovaries were saved. Eleven tubes were saved, or 1 to about every five and a half patients. In these cases the following organisms were found:

	<i>Times.</i>	
Gonococcus	6	
Streptococcus pyogenes	4	(1 doubtful)
Staphy. pyog. aureus	3	
Staphy. pyog. albus	2	
B. coli communis	2	
B. mucosus capsulatus	1	
Cocci (no growths).....	3	
	<hr/>	
	21	in all or $\frac{1}{3}$ of the cases.

In the pus cases the abdominal wound became infected 4 times, or 6.34 per cent. From the infected abdominal wounds in the pus cases the following micro-organisms were isolated:

	<i>Times</i>
Streptococci	1
B. coli communis	1
Staph. pyog. aureus	1
Staph. pyog. albus	1
B. mucosus capsulatus	1
	<hr/>
	5

Micro-organisms found in abdominal wounds other than pus cases:

	<i>Times.</i>
B. coli communis	2
Staphy. pyog. albus	2
Cocci and bacilli on coverslip, no growth.....	1
	<hr/>
	5

The leucocyte count in the pus cases:

Highest	36,000
Lowest	10,000
Average count	21,615

Drainage was employed in the pus cases as follows:

Abdominal alone	none
Vaginal	13 times
Abdomino-vaginal	2 "

Fifteen times, or in 23.42 per cent. of all pus cases.

Drainage was carried out 21 times in 237 cases, or in 8.86 per cent of the total number of cases. Once by the abdomen alone; twice by the abdomen and vagina combined; eighteen times by the vagina alone.

The convalescence was interrupted by the following conditions: Bronchitis in four cases; pneumonia in one case; pleurisy in three cases; phlebitis in one case; abdominal fecal fistula in one; post-operative mania in one; suppuration of abdominal wound twenty times. Total number interrupted, thirty-one.

In those cases interrupted by infection of the abdominal wound (eight of which were in the pus cases), nineteen of the infections were slight and one marked. Total number of abdominal wounds infected, 8.43 per cent. Number of cases requiring a secondary abdominal operation for the relief of symptoms, seven. Number of cases under observation on account of pelvic discomfort, eight. In seven of these cases the symptoms of which the patients complained disappeared after a year's time; one is still complaining. Deaths in the pus cases two, or 3.1 per cent. Deaths in the whole number of cases (237) four, or 1.68 per cent.

CASE I.—Among the pus cases the *diplococcus pneumoniae* was found in the secretions in the peritoneal cavity, together with *B. mucosus capsulatus* and *B. coli communis*.

CASE II.—The patient also died from the effects of a pelvic peritonitis; autopsy not allowed.

The two remaining cases were in the non-suppurating class.

In one there was an ectopic gestation which has involved the right tube. On the eleventh day following the operation she developed an acute obstruction of the bowels. The temperature and pulse were practically normal. The abdomen was reopened and the obstruction relieved, but she succumbed from shock one

hour following the operation. In the second case the disease of the lateral structures was complicated by an adherent, much thickened and contracted gall-bladder, which contained three good-sized gall-stones. The opening made into the gall-bladder was difficult to close. The patient developed a localized peritonitis, which resulted fatally five days after the operation.

702 ROSE BUILDING.

Pyothorax.—Carl Beck (*Post-Graduate*, June) uses the term pyothorax instead of empyema, because the latter does not tell where the pus is located. In cases of serous effusion, aspiration, perhaps repeated, will be all that is necessary, but when there is pus in the pleural cavity there must be a large opening. It is unsurgical to treat abscess of pleural cavity on principles different from those which govern treatment of other abscesses. Modern surgery treats abscess cavities by free exposure and gauze packing. While it is not denied that a cure can be effected by aspiration, especially if the effusion contains no solid elements, it is too hazardous a procedure as long as the presence or absence of such elements cannot be determined. In 55 per cent. of the author's cases solid masses were found in the abscess cavity. Aspiration should be reserved for exploratory purposes, for the cure of serothorax, and as a preliminary procedure where patients are extremely exhausted. In all cases of pyothorax, no matter how desperate they may appear, the resection of a piece of rib should be done. Cures have been effected in cases where there seemed to be no gleam of hope. Even when the tarrying policy had caused amyloid degeneration of the liver, ascites, etc., entire restoration to health has sometimes followed the resection treatment. The periosteum should be pushed out of the way by means of a blunt dissection, a section of the rib removed and the pleura opened. A small pleural incision is made at the outset, as adjacent viscera, especially the heart, are displaced by the effusion, and their sudden replacement would produce shock. Up to this point the operation should be done as rapidly as possible, but from 20 to 30 minutes should be allowed for the evacuation. After a few ounces of the pus escape press a sponge against the opening in the pleura for 10 to 15 minutes. Then introduce the finger and see if there are any clots present. If so, remove them, irrigate cavity with sterile water and pack it with 3 per cent. iodoform gauze. Great care should be exercised in anesthesia. Ether is contraindicated because it produces congestion, and chloroform is dangerous because of its paralyzing effect on the heart. If the pulse is fairly good the patient should be given an anesthetic, but always carefully and never to its full extent. If the pulse is bad the author uses Schleich's method of local anesthesia.

GUNSHOT WOUND OF THE ABDOMEN INVOLVING THE HIP JOINT. REPORT OF A CASE WITH REMARKS.¹

BY

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I PRESENT herewith a patient received at the Exposition Emergency Hospital, together with the history of the case, which is as follows:

Ernest Morgan, aged 18, a visitor and looker-on, of remarkably vigorous constitution and unexceptional health, was shot in the abdomen during a brawl on the Pike at the St. Louis World's Fair, June 18, 1904. He was admitted to the Emergency Hospital on the grounds, and within one hour an abdominal section was made. Upon examination, it was found that the ball had passed through the abdominal wall near McBurney's Point, passing inward and slightly downward. On examining the viscera, it was found that the ball had penetrated the cecum, making two openings, one in front and another behind, passing down into the soft parts lining the pelvis. These were closed up by Lembert sutures, the abdomen cleansed of large quantities of blood and escaping contents of the bowel, and the incision closed with through-and-through sutures. The patient left the table within an hour under very favorable circumstances, the pulse being 72 and temperature normal. The next morning he complained of great pain in the hip joint, and was unable to move that limb. For ten days his condition was favorable, when he gave evidence of disturbance, especially about the joint. Chills and fever and increased pain suggested an examination with the X-ray, which would have been used earlier were it not for the fact that we had not been provided with such an appliance up to that time. On July 11, after the bullet was removed, an incision was made over the joint, disclosing the presence of pus outside of the joint, which was opened, showing that all of the head of the bone within the capsule was entirely destroyed and fractured; likewise, the acetabulum was fractured and necrosed; following up the course of the

¹Read at the Seventeenth Annual Meeting of the American Association of Obstetricians and Gynecologists at St. Louis, Mo., Sept. 13-16, 1904.

cavity made by the bullet, the missile was removed, finding it lodged in the upper and outer margin of the cavity of the socket. The necrosed portions of this bone were chiseled out, and with a sharp curette were entirely cleansed; likewise, the dead portion of the head of the femur was removed, the cavity packed with gauze and thoroughly drained. He afterward showed evidences of sepsis, which prompted me, on the 22nd of July, to reopen the wound, wash out the cavity and introduce further drains. These are continually used up to the present time. About three weeks ago he manifested evidence of acute nephritis. Upon examination, it was found that he had a large quantity of albumin, with casts, which was evidently due to toxemia, as found in scarlet fever. Since that time, by repeated cleansing of the cavity and thorough drainage, these evidences are disappearing, leaving him in a fair condition for recovery. The subsequent treatment will be to free the cavity and its surrounding structures of all suppuration, and by that means we hope to restore our patient to his normal health, probably leaving him with a shortening of the limb, and perchance a degree of ankylosis.

Gunshot wounds of the hip joint are not very common. In the statistics of the Franco-Prussian War, 1870-71, there were only one hundred and twenty-eight cases. In the recent Spanish-American and South African Wars Kuttner and Makins saw only one case each of small caliber wounds of the hip joint. Most of the wounds were from before backwards, or in the reverse direction. The damage to the joint varies from small penetration of the capsule without injury to the joint surfaces, fracture of the head of the greater or lesser trochanter, or a simple penetrating wound of the neck, to very extensive comminuted fracture of the entire upper end of the femur and joint cavity. If the bullet penetrates the acetabulum, it enters the pelvis and may injure the viscera, the bladder or rectum. The bullet may enter the hip joint through the abdomen or pelvis. Diagnosis of the wounds of the hip joint may be very difficult. The X-ray makes it much easier at the present time, however. Usually, the direction of the wound should guide the surgeon, as well as the attitude of the patient at the time of the injury. If the capsule alone is involved, or the damage to the joint is slight, the symptoms in recent cases are often atypical. The traumatic inflammation usually begins in the second week after the injury. If the inflammation appears very light it may have been transmitted, assuming that the joint was injured primarily and that the bullet

injured only the soft parts. In the absence of a wound of exit, the diagnosis is often possible, if the symptoms of comminution of the neck are present, namely, outward rotation, shortening, crepitus, etc. Probing or manipulation strictly should be avoided. The prognosis of gunshot wounds of the hip joint has been very bad, the chief danger being that of infection, as its development is facilitated by the hidden position of the joint and the discharge of pus prevented by the thick covering of the soft parts. The prospect of recovery diminishes with the severity of the injury and complications. Of the 128 gunshot wounds of the hip in the Franco-Prussian War, during the pre-antiseptic period 102 died, mainly of pyemia. The 4 cases amputated were fatal, and of the 27 resections, 25 were fatal. Of the 97 non-operated and treated conservatively, 73 died. The two cases of Kuttner and Makins, mentioned above, which were treated conservatively, recovered. Ankylosis is the almost uniform result of gunshot wounds of the hip, usually with more or less shortening of the limb. The period of recovery averages about six months.

In the treatment of these cases we recall the well established principle that, unless the ball disturbs the patient, it should not be removed. In the case noted above this rule was adhered to until circumstances forced me to act in the removal of the cause producing the disturbance at the hip joint.

3538 WASHINGTON AVENUE.

CORRESPONDENCE.

INTRAPELVIC HEMATOMA FOLLOWING LABOR NOT ASSOCIATED WITH LESIONS OF THE UTERUS.

To the Editor of THE AMERICAN JOURNAL OF OBSTETRICS:

DEAR SIR: Apropos of the article by Dr. J. Whitridge Williams appearing in the JOURNAL for October, may I ask you to publish the enclosed descriptive portion of a reprint from the "Transactions of the Philadelphia County Medical Society, April, 1899," in order that my article may be included with the contributions bearing upon the subject?

It has naturally, by reason of the erroneous title as to Rupture of the Uterus, escaped the notice of Dr. Williams; and yet, it is so clearly analogous to the case which he describes as to recommend it to the interest of your readers.

I am aware that its reappearance will subject me to the criticism of having made a false diagnosis, but this fact of itself enhances the value of the case.

October 24th, 1904.

Very truly yours,

W. REYNOLDS WILSON.

The patient under consideration was an unmarried primipara, who entered the Philadelphia Lying-in Charity, November 12, 1896. She gave no history as to past conditions of ill-health, and no account of any previous pelvic trouble. Her pelvic measurements were normal, with the exception of a slight narrowing of the transverse diameters.

Labor began at 5:30 A.M. and progressed rapidly, dilatation being completed within six hours. The pains were frequent, but moderate in severity. The head descended rapidly to the perineum, and the child was born at 12:25 P.M. The placenta was expelled spontaneously at 12:40. The infant weighed seven pounds, and presented the normal cephalic measurements. There was bilateral laceration of the cervix, the anterior lip being dragged down by the advancing head. The perineum was also slightly lacerated.

About six hours after delivery the patient complained of severe pain, referred to the rectum and the emergence of the sciatic nerve on the left side. Hemorrhage from the uterine cavity was present. It was distinctly noted that the source of this bleeding was not in the cervix. Tenderness in the left iliac region was present, together with abdominal distention. On the second day after delivery the patient suffered from nausea, and was disturbed by the passage of frequent bloody stools. The pulse was rapid, and the general condition was that of great weakness. Thirst was present. The abdominal tenderness increased, and there was considerable muscular resistance and dullness on the left side of the abdomen, dullness extending as high as the fundus of the uterus. On the third day an area of extravasation appeared at the most dependent portion of the left buttock, extending toward the anal region, and reaching a diameter of $3\frac{1}{2}$ inches. The intra-abdominal swelling gradually increased, but was accompanied by less sensitiveness. The patient, however, began to suffer from pyemic symptoms; the temperature rose abruptly to $102\frac{3}{4}^{\circ}$, gradually reaching, at irregular intervals, $104\frac{1}{2}^{\circ}$ as the maximum point. There were frequent rigors. These symptoms were followed by extreme tenderness and puffing at the umbilicus. *Fistulæ* appeared in this region, connecting evidently with the deeper sinuses which extended into the pelvis. Long, foul, necrotic sloughs were passed from the vagina. The patient became emaciated, and died on the forty-fourth day.

The following record of the condition found post-mortem is interesting in connection with the clinical course of the case:

The body, very much emaciated, presents on the abdominal surface the fistulous openings, which, when penetrated by the sound, extend downward and to the left to the depth of eight inches, outside the transversalis fascia. Incision—from the ensiform cartilage to the symphysis pubis—reveals multiple sinuses opening into a large abscess cavity extending across the pelvis behind the pubic region. There exists no communication between the abscess cavity and the cavity of the abdomen. The upper wall of

the abscess lies beneath the rectus muscle and exterior to the thickened peritoneum. The lower wall is in juxtaposition with the bladder, which is deflected to the right. The uterus is apparently attached to the anterior abdominal wall by plastic adhesions. The tube and ovary on the left side are apparently incorporated in the abscess wall, as they are not recognizable. The general peritoneal cavity is shut off by plastic adhesions in which the omentum is included.

In addition to the sinuses extending to the sub-integumentary tissues and the vagina, the pus had burrowed along the crest of the ilium and, penetrating the sheath of the psoas muscle, had reached as high as the border of the diaphragm.

The viscera were not examined.

The clinical record of the case shows no abnormality in labor, and especially none of the classic signs of uterine laceration, such as the occurrence of severe pain, sudden interruption in the contraction of the uterus, the presence of shock and the evidences of active hemorrhage. The duration of the stages of labor was moderate. The os appears to have dilated normally. The size of the child's head was not above the average, the measurements showing only an excessive elongation of the occipito-mental diameter. The fact of the cervix being lacerated bilaterally seems only to have been discovered during the ordinary course of examination after delivery, and not in consequence of evidence of uterine rupture.

Notwithstanding the negative evidences, however, a general survey of the clinical and pathologic conditions in the case points to but one conclusion, namely, that the patient had suffered from rupture of the lower uterine segment, extending from the cervix and giving rise to a slowly-forming hematoma which invaded the broad ligament and became the seat of infection by means of its communication with the uterine cavity. Although the signs of hemorrhage made their appearance later, the rupture took place during labor. The condition, however, remained unnoticed until the pressure of the accumulating blood gave rise to pain. The appearance of foul vaginal sloughs and umbilical fistulæ denoted a burrowing phlegmon of the pelvic connective tissue, finding its way, in all probability, beneath Poupart's ligament to the superficial tissues of the abdominal wall.

The patient's illness may be divided into four periods:

(1) That of the occurrence of sudden pain, and symptoms of depression.

(2) That in which a septic parametritis, originating at the point of original bleeding, made its appearance.

(3) That characterized by pyemic symptoms.

(4) That marked by the occurrence of emaciation and exhaustion, terminating in death.

The early development of the symptoms was confusing, as the perirectal and sciatic pain was not immediately accompanied by the evidences of hemorrhage, and it was only when the patient

began to suffer from symptoms of depression that the actual condition was suspected.

As bearing upon the question of treatment, it is interesting to note that the abdominal distention and tenderness immediately following the symptoms of hemorrhage seemed to diminish as the case progressed, precluding the possibility of a general peritonitis, which would have called for operation had it existed. The question of surgical interference should have been influenced by the consideration that the patient appeared never to have regained her vitality after the appearance of the first symptoms of depression. The difficulty of locating the seat of hemorrhage at the beginning of the pain, however, must be considered—the pain itself having somewhat obscured the evidences of hemorrhage. Reverting to the question of peritonitis, the condition post-mortem showed only a localized plastic exudate, not of a general inflammatory nature, but conservative in origin, shutting off the suppurative parametritis.

TRANSACTIONS OF THE CHICAGO GYNECOLOGICAL SOCIETY.

Meeting of September 23, 1904.

The President, EMIL RIES, M.D., in the Chair.

VENTRAL HERNIA ULCERATING INTO PERITONEAL CAVITY.

DR. EMIL RIES.—Here is a specimen from the abdominal wall of a woman, 35 years of age, who had an operation for pelvic abscess about eight years ago. At that time, for some reason, the abdomen could not be closed. It was left open and packed. The woman recovered, and in consequence of leaving open the abdominal wall a large hernia developed. This hernia was operated upon two years ago unsuccessfully; the wound suppurated; it took a long time to heal, and the woman became pregnant shortly after the operation, and with the stretching of the abdominal wall a new hernia developed. When she came to me, about three weeks ago, she had this ventral hernia. She had been wearing a binder over the abdomen, and ulcers had developed on the abdominal wall. She was pregnant five months, and I noticed on the dressing a remarkable amount of fluid. This dressing she had put on herself, with the cleanliness she had been taught during her previous surgical experience. The dressing was soaked with fluid. When I made an examination there was a constant trickling from one of these openings. I told her that she was in considerable danger, and that I would not assume responsibility unless she underwent

an immediate operation for the resection of this hernia. She waited another week and made arrangements to enter the hospital. At that time two ulcers were covered with green sloughs, and discharged a large amount of fluid. When I opened the abdominal cavity and began to dissect out this hernia, I found two suppurating areas on the inside, one of which perforated the abdominal wall, allowing the escape of peritoneal fluid. The other had not perforated entirely, but the peritoneum was green from pus. Behind the hernia was the pregnant uterus. There were no adhesions of bowel, but there was slight adhesion of the omentum in the peritoneal cavity at the upper angle of the wound. The uterus lay so close to the abdominal wall that it shut off the bowel and the rest of the peritoneal cavity from the suppurating area on the inside, but the anterior wall of the uterus, as far as the hernia extended, was covered with fibrinous masses, and the fluid in the peritoneal cavity, which was abnormal in amount, contained fibrin, and ran out as soon as we opened the peritoneal cavity. We had, therefore, a limited peritonitis. The woman had a temperature of between 99° and 100° , and said that she was feeling perfectly well, with the exception of occasional vomiting, which she had in previous pregnancies also. But she had no other signs of peritonitis.

When I removed the hernia I attempted to bring the edges of the muscle together. But they were too far apart. I then decided to close this large hernia by inserting a silver wire mat into the abdominal wall, which, so far (12 days), has held the abdomen successfully, and the woman has made a good recovery and is going home to-morrow. Pregnancy was not interrupted; it is developing normally, and the woman is in good condition.

DR. HENRY F. LEWIS read a paper entitled

ECTROMELUS.¹

DR. EDWARD ROSENOW (by invitation) followed with a paper entitled

BACTERIOLOGICAL OBSERVATIONS.²

DR. EMIL RIES.—This paper is a timely and important one. I am sure many of the members can contribute from their own experience cases where they felt convinced that every possible precaution had been used in the way of disinfection, etc., nevertheless infection took place. I can say for myself that I have not had a case of sepsis after operations outside of the peritoneal cavity in nine years, with the exception of one case, and that was one of extirpation of carcinoma of the breast. My assistant ap-

¹See Original Article, Page 747.

²See Original Article, Page 762.

peared rather flushed at the time of operation, and I asked whether there was any trouble. The answer was negative. That assistant was taken down the same evening with measles and a bad sore throat. The patient died of streptococcus infection. This is the only patient I have ever lost from sepsis following an operation outside of the peritoneal cavity.

I might remind the members of the Society of the experiments of Mendes de Leon, carried on in Holland recently, in which he came to conclusions similar to those of Dr. Rosenow. They were carried out in a somewhat different manner, in that the author took shorthand notes of everything that was said in the course of a number of operations, and then read the same words, the same sentences that appeared more or less necessary in the operation, as, for instance, "Sponge, please," etc., against a plate of gelatine contained in a specially constructed apparatus, and the number of colonies developed was marvelous.

The Doctor raised the question whether disinfection of the mouth of the operator before operation would be of value. Now, the members of the Chicago Gynecological Society often smoke at their meetings, and as there is no doubt but what a certain amount of disinfection is produced by the products of slow combustion of cigars, those who have raised objections to smoking at the meetings will henceforth have to be silent. It would be interesting to know whether Dr. Rosenow has experimented with smokers, and, if so, whether he has noticed any difference in the colonies of bacteria in their mouths in contrast with the mouths of non-smokers.

DR. CARL WAGNER.—The paper of Dr. Rosenow, to which we have just listened, is a very instructive one, and it reminds me of some similar investigations along the same lines that were made three or four years ago by Dr. Tavel, if I remember correctly. His experiments, however, were conducted somewhat differently. He placed plates at different places in the operating room during operation, as, for instance, one on the floor in the farther corner, one next to the operating table, the operator and his assistants; one underneath the operating table; one on the top of the table of instruments; one near the dressings, and one very near the operator's hands. He not only did this under the ordinary condition of the room, but also after the floor was mopped with, I think, bichloride of mercury solution or some other antiseptic agent. It showed an enormous difference in the number of colonies of bacteria collected before and after mopping the floor. His experiments demonstrated especially that the colonies of bacteria collected on the plate near the hands of the operator were less than in the other plates. Next to that was the plate on the instrument table, and next to that came the one at the foot end of the patient on the table, and then, last and most in number of colonies, the plate on the floor. Even after mopping the floor, it was found that the plate on the floor contained the most microbes, on account of the dust settling out of the air to the floor.

In visiting different European hospitals, and taking these findings into consideration, I have come to the conclusion that ideal conditions during operation would be: (1) To mop the floor directly before operation with some antiseptic solution, or even having antiseptic fluid running all over the floor to guard against raising dust with the feet; (2) clothing everybody in the operating room with rubber boots which are washed off with bichloride of mercury, in order to guard against the dust and bacteria-laden dirt which drops from the soles of the shoes. These rubber boots may be kept in antiseptic solution all morning before the operation. (3) A full operating gown ought to be put on everybody before he enters the operating room, in order to retain the dust which fills the meshes of the cloth of the waistcoat and trousers to these garments and thus prevent it from diffusing into the air and contaminating it. Of course, after disinfection of hands is completed, another sterilized operating gown is put over the one donned before entering the operating room. (4) The fourth postulatium is a precaution which I saw invariably used and repeated in the intervals between different operations by Witzel, in Bonn, namely, a gargle with permanganate of potash solution, to be taken by everyone connected with the operation or entering the operating room. Not even visiting doctors should be exempt from this.

DR. ROSENOW (closing the discussion).—A number of observations regarding the disinfection of the mouth were made, really accidentally. A number of students, the day we carried on these experiments, before coming to the class, thoroughly cleansed their mouths with a mouth wash, and the result was striking. The number of bacteria deposited was not one-tenth as great as in those cases in which no mouth wash was used. In summing up, I did not mention particular instances, but in a number of cases that observation was made, so that there cannot be any question but what a good mouth wash is effective.

I have not made any tests as to the number of bacteria present in the mouth of smokers. During operations a number of plates were placed on the floor; on the instrument table, and still higher than that, on a shelf. It was interesting to observe how the lower we went towards the floor, the greater the number of bacteria deposited. These results are almost constant, and I cannot help but believe that this method of analyzing air is very reliable.

In addition, I made this observation: A number of plates were exposed in the operating room that was unoccupied, but had been occupied shortly before, and had not been fumigated for over a week. The plates were exposed and the results put down; then the operating room was fumigated, and no plates were exposed immediately after fumigation, because fumigation was thorough, and we had a right to believe that the air was practically free from living germs. After the whole day, and after three operations had been performed (some were tedious), the air in the room was still better, and deposited fewer bacteria than the air

previous to fumigation. It is not absolutely necessary always to fumigate against spore-bearing bacteria, which requires considerable time, because it is so seldom that these will be encountered, and the ordinary pus bacteria would be killed in a much shorter period.

DR. HENRY F. LEWIS.—I think Dr. Rosenow said that most of his observations in regard to coughing, talking, breathing, etc., were made on students and nurses. I would like to ask him whether the question of whiskers has entered into any of these observations. For instance, in an operator who has large bushy whiskers, would the whiskers tend to filter the bacteria, or would there be a tendency to have a larger number of bacteria? It is a question whether large whiskers do not filter in the same way as layers of gauze would. On the other hand, take an operator who has worn a beard for a long time, and who is not particularly cleanly about it, it may contain colonies of microbes. I would like to ask whether there were any observations conducted along that line.

DR. ROSENOW.—There were not.

DR. RUDOLPH W. HOLMES read a paper entitled

CESAREAN SECTION FOR PLACENTA PREVIA—AN IMPROPER
PROCEDURE.

It is an absurdity to compare results of Cesarean section performed for a pelvic indication with the problematic results for placenta previa, or even with the results following the few cases reported: this same absurdity would be manifested if we compared the prognosis of laparotomies performed for visceral carcinoma and for simple uncomplicated conditions.

In spite of the testimony of those who claim Cesarean section is a harmless operation, the mortality of the operation is still high, which refutes the statement of those who really are not in a position to speak with full authority. In 1,257 Cesarean sections the mortality was 12.1 per cent.; in 556 Saenger operations the mortality was 13.3 per cent.; in 280 Porro cases the death-rate was 14.6 per cent. In 869 consecutive Saenger and Porro cases the fetal mortality was 10.7 per cent. Operators are prone to exclude certain cases terminating in death on account of supposedly extenuating circumstances, but these same extenuating circumstances do not cause any system of elimination if the women recover. Also certain writers suppress certain deaths, so they will not vitiate their clean record. The writer has the data of one such operator who neglected to report his deaths, or even to include them in his percentage deductions, and his results are quoted as the brilliant results of an expert, when his suppressed mortality is over 20 per cent.

The mortality of placenta previa is dependent upon the procrastination of the attendants, disregarding the significance of the hemorrhage, the half-hearted way of treating the cases, and thirdly

the attempts to carry the woman through the remainder of the pregnancy. Further, the direct cause of the high mortality in general practice is due to inadequate assistants, insufficient armamentarium, and absence of conscientious asepsis.

The mortality of placenta previa is low in the hands of the expert, and will continue to be high in the practice of the general practitioner whether he does Cesarean section or the usual obstetric operations. In 4,731 cases of placenta previa, occurring from the seventeenth century the mortality was 14.3 per cent.; since the days of antisepsis in the eighties, in 2,756 cases the mortality was 7.36 per cent.

In over 600 cases there were no instances of rigid os. The surgeon and general practitioner are not versed in obstetric practice, and only too often take an undilated os to be a rigid one.

As the placenta in previa is situated in the lower uterine segment which has the minimum amount of retractility and contractility, there is the same danger of an abnormal third stage in Cesarean cases as when the case is treated obstetrically, therefore there is great liability of post-partum hemorrhage. A particular danger of the placenta previa cases is of infection, for the placental site is so close to the lochia which is purulent that the germs may easily find their way up into the most dangerous field of an infection.

There are 25 cases of Cesarean section for placenta previa which may be used for statistical study; the mortality was 20 per cent., a result which is far worse than given by obstetric treatment; 9 children were born dead, and 7 died within two weeks, a fetal mortality of 64 per cent. We find that while the direct fetal mortality is reduced one-half by Cesarean section, the maternal mortality is increased threefold. Theology and sociology do not demand that the life of the mother must be sacrificed to save the child; so long as an operation is not done directly, deliberately to kill the child, there is not the justification of Cesarean section on account of a religious tenet or social law.

Cesarean section for placenta previa has not received the approval of one obstetrician whose experience warrants an authoritative statement. Every obstetrician who has been driven to perform the operation in the presence of previal hemorrhage has had the policy dictated by grave complications like pelvic contractions. On the other hand, every surgeon and general practitioner who reported an operation has been led to do the work because it was a placenta previa and nothing else. The men who have recommended the Cesarean operation for previa are men who admit they know little or nothing about obstetrics, as for instance the late Lawson Tait, who recommended the operation and then in the next breath candidly declares he practically never had a normal case of obstetrics in his life.

DR. JOSEPH B. DE LEE.—This is a fine paper. It is very timely, because there is no doubt the field of Cesarean section is being

inordinately widened. Nevertheless, I believe that a case will, now and again, occur in practice where I will feel that the best, the quickest and safest way of getting the case to a termination will be by means of Cesarean section. Dr. Holmes has quoted thirty cases of placenta previa I reported some years ago. Since then I have had eight, making thirty-eight cases of placenta previa. It was one of the last cases, which I had about a year ago, that converted me to the idea that possibly I would run across a case where the indications were clear for Cesarean section. The woman was a primipara, thirty-eight years of age, who had a slight hemorrhage before entering the hospital. She had quite a severe hemorrhage on the morning after entering the hospital. She was tamponed. She had slight pains for two or three days. The tampon was renewed after twenty-four hours. I found it was a full-term labor, and the woman was a few days past the expected period of confinement. The abdominal parietes were rigid; the child was alive; hemorrhage was not profuse. Internal examination showed a rather long cervix which admitted one finger, and was completely uneffaced, and I thought at the time the os was a little rigid, that it was a little harder than it ought to be. I could feel the placenta all round, and considered the case might be a suitable one for Cesarean section. The subsequent course was this: I passed the fingers into the uterus and far to the side, ruptured the membranes; put in a colpeurynter, and applied two pounds of traction on it and tied it to the foot of the bed. I then went into the next room, which was separated from the confinement room by a wash room, left one of my assistants to watch the case, while I delivered a clinical lecture on it. The woman very soon got strong pains, which became stronger and stronger and, after consuming about three-quarters of an hour in the delivery of this clinical lecture, I went back into the room and found that she was crying with awful pains. She had had two particularly strong pains. I was struck with the changed condition of the woman, and on examination found that the colpeurynter had been expelled into the vagina; in the short period of three-quarters of an hour, the rigid cervix had dilated, and the colpeurynter was expelled into the vagina. I immediately put my hand into the uterus, and discovered a rupture of its posterior wall. The placenta was still attached to the internal surface of the cervix, but was, except a small area to the right behind, completely detached at the upper end, lying partly free in this retrouterine space or opening in the sub-peritoneal space. The child presented by the breech, and I did a rapid and easy extraction. The child was dead. I tamponed the uterus as fast as I could; but the woman died in a few hours. There is no doubt in my mind that if I had done Cesarean section in that case I would have saved both mother and baby. The woman was in a hospital; she was examined by clean men; everything was there, and I could have done a Cesarean section in twenty-five minutes. I have regretted I did not do it.

If another case like it should occur with exactly or approximately similar conditions, I would consider Cesarean section strongly. All the objections to Cesarean section in a placenta previa do not occur to me just now. One might be that the placenta being in the lower uterine segment, the contraction and retraction may not be thorough enough to stop hemorrhage as in an ordinary Cesarean section. I do not see why one could not tampon the uterus above as well as from below, or put in a tampon from above and pull it out, and tampon again. I would not do Cesarean section on a woman who was having so much hemorrhage that she would die while I was preparing for it. That is where I would do a Braxton-Hicks version and thus tampon the uterus temporarily. Aside from that, the danger from sepsis from the tamponade by the general practitioner is to be considered; but still Cesarean sections have been done with success after the general practitioner has tamponed, and after he has made examinations in these cases. I would extirpate the uterus to guard against sepsis; still there are many who would not hesitate to perform Cesarean section even though frequent examinations may have been made. The danger of sepsis, then, while admittedly is greater, still in the presence of an undilated cervix and of a healthy living child at term, I would consider not so great as to be prohibitive.

Nevertheless, I side with Dr. Holmes, that for the general practice of obstetrics Cesarean section is not to be considered as one of the operations of election in placenta previa.

Another point. Where you get a case of placenta previa with a small cervix, it is very tedious and a nerve-racking procedure for both patient and physician. Very often it takes five or six or eight hours. I recall one case in which I spent something like twelve hours pulling on the colpeurynter to get complete dilatation, until finally I could get sufficient dilatation to make extraction with safety to the cervix. A point which Dr. Holmes has emphasized, and which ought to be re-emphasized, is that the cervix in placenta previa should not be rapidly dilated, nor is this dilatation to be undertaken lightly. It is a question whether the danger of infection from below is not equal to or just the same as it would be from performing a Cesarean section. In the hands of a very competent man Cesarean section in a case of placenta previa may be justifiable and can be done safely, and should be considered for the sake of trying to relieve both the physician and patient of the long suspense. I admit, that is a peculiar kind of consideration, but nevertheless it is one that should enter into this subject. I realize that putting a woman to sleep and doing Cesarean section on a nervous patient is entirely different from using a colpeurynter, waiting many hours, following it with a rapid introduction of the hand and immediate extraction of the child, and danger to the uterus. It is the same with Hicks' version and slow delivery. In a recent article, Ivanhoff, in the *Annales de Gynecologie*, speaks of cases where he found placenta

previa was the cause of rupture of the uterus. These and other thoughts have made me rather inclined to believe that we will find later on indications for Cesarean section in placenta previa.

DR. C. S. BACON.—I agree almost entirely with Dr. Holmes in condemning the operation of Cesarean section for placenta previa. The points he has made are very valuable, namely, that the danger in the ordinary management of placenta previa is due to three causes: (1) That sufficient attention is not given to the early appearance of hemorrhage. In the great majority of cases serious results would be avoided if the uterus were emptied upon the first appearance of hemorrhages. (2) The method of opening the uterus and emptying it is not properly understood. A great many are absolutely unacquainted with the proper method of turning and undertake the operation without sufficient preparation. (3) It is a mistake to make immediate extraction or too early extraction of the child. I have in two or three instances left the child in the uterus for twelve hours after completing the dilatation, and would not hesitate to leave a child twenty-four hours if dilatation was not completed. The child should always be expelled spontaneously. If the facilities are present, it may be possible to save the child during the process of expulsion by a cutting operation—perhaps vaginal Cesarean section; but in the interests of the mother, which must be considered, it should always be emphasized that there is no danger to her in letting the child be expelled spontaneously. If the woman is properly prepared and the feet of the child wrapped with sterile gauze, there is no danger of infection, so that with that method of treating placenta previa there is no reason for section except to try to improve the fetal mortality.

There is no question that the metreurynter will save more children than turning. In Dr. Holmes' tables a distinction was not made between the fetal mortality where the metreurynter and where turning was used. Where it is possible to use the former, we may adopt that measure, but the indications for the metreurynter, instead of turning, should be gone into in a little more detail, and I will not take the time to do so now.

As to the rigidity of the os in placenta previa, I have some doubt whether Dr. Holmes is correct in saying that it is almost never rigid. I have not myself seen in the cases I have had an os that could not be dilated manually or digitally, but we have a sufficient number of cases on record where that was impossible. Even Philander A. Harris, who is a great advocate of digital dilatation, and formerly held that it should be performed in every case, found a case of placenta previa with a rigid os that resisted a pretty prolonged effort at dilatation. I imagine that there are cases in which the os is very rigid at an early stage, and where there might be considerable hemorrhage in trying to effect dilatation, consequently the question of adopting some other procedure might come up. In these cases, personally I should not feel afraid to trust to a properly applied tampon, and it seems

as if a rigid cervix furnishes no reason on the part of the child, or on the part of the mother, to resort to Cesarean section when the mother is *in extremis*; possibly the indication might arise to control hemorrhage and we might find it necessary to empty and then remove the uterus just as it might be necessary to remove the uterus to control post-partum hemorrhage. But in such cases one would suppose that the favorable way would be a rapid vaginal operation for extreme cases, and possibly for a few other cases, followed with equally good results. The question of the vaginal operation for extreme cases, and possibly for a few other cases, is a legitimate one for discussion; but as far as the abdominal operation is concerned, I should think there is never any indication for it.

DR. C. B. REED.—I would add my voice to what has already been said in condemning this operation which in my opinion is unjustifiable. Dr. Holmes has presented the matter very clearly, and the summary he gave is quite decidedly and distinctly against the operation. I believe we ought unanimously, as a Society, to decide against that operation as a routine procedure. That exceptions may occur when the operation is desirable must be admitted, of course, but as long as the operation is given the authority of the better operators, it will be undertaken by those who are not good operators. It will be undertaken by those who are possibly surgically trained, and not obstetrically trained, and the result will be an obstetric crime, because the operation cannot be carried out in all conditions until the obstetrical maneuvers have been authoritatively passed over. I think the objections to the operation have been very satisfactorily covered.

I would like to call attention particularly to the use of Braxton-Hicks' version in this condition, which is more especially obstetrical and to my mind particularly adapted to cases of placenta previa. In fact, it has been specifically stated by no less an authority than Veit, that if there is a maternal mortality by any operator in placenta previa, who does the Braxton-Hicks' operation, the fault should be looked for in his technique, or faulty observance of the conditions under which he carried out his technique; that he should have a mortality absolutely *nil* if he carries out the Braxton-Hicks maneuver. I am not disposed to go so far as Veit in this matter, but I believe the operation possesses merits and advantages over other operations which also would have their turn and proper indications in certain conditions. The colpeurynter, which was advocated by Dr. De Lee in a paper presented before the Chicago Medical Society about two years ago, is certainly one of the most valuable of the operations or methods at our command. An objection I raised to the operation at that time was the time element in the operation. I still believe that to be a very important factor, and I am glad to see Dr. De Lee agrees with me in regard to the importance of that factor. All of these operations, I think, have their particular indication; but I believe it is desirable that we should take a decided stand against

the use of Cesarean section in placenta previa cases as a routine measure.

DR. GEORGE SCHMAUCH.—As Cesarean section in placenta previa has been, and still is, recommended in this country, I think we ought to be thankful to Dr. Holmes for publishing the sad results of this operation, for raising his voice against such operation and criticizing these surgeons. I perfectly agree with the doctor and will never believe that placenta previa indicates the Cesarean section. There are only two exceptions, when this operation might be considered. The first one is a primipara, who, by all means, wants to have a living child and whose child is at term. If such a woman consents to the section with its dangers, then the physician certainly is entitled to perform it. The second exception is, in my opinion, the combination of placenta previa with contracted pelvis. In a case of considerably contracted pelvis the child's head may be retained so long that profuse hemorrhage will result and the life of the mother hereby becomes seriously endangered. However, in these cases the presence of placenta previa only enforces the relative indications for Cesarean section, which in reality is caused by the contracted pelvis.

A paper recently published by Dührssen, who performed his vaginal Cesarean section in a woman with placenta previa, five or six months pregnant, did not surprise German obstetricians. How little serious this publication by Dührssen and the new indication for his operation, is taken in Germany, you easily will understand by reading the comical criticism of it written in the same journal, *C. f. Gynäk.*, No. 20, 1904, by a more conservative obstetrician, Stefft. It gives Dührssen the advice, if he earnestly intends to treat abortion with vaginal Cesarean section, at least to change the name of this operation. The name Cesarean section ought to be reserved for children able to live outside of the uterus. He suggests the name "Doctor's section" for Dührssen's case, as it was only a fancy operation, and not an operation indicated by scientific principles. I wish to add a few words about rigidity of the cervix in placenta previa. I have performed myself version after Braxton-Hicks in about fifty or sixty cases of placenta previa, but never have met a rigid cervix. Version in placenta previa is possible as soon as the os is dilated for one finger, even if in some cases we will have to pull down the foot through the cervical canal with the help of a vulsellum. Placenta previa is nothing rare in Berlin, we had an average of about 50 cases in a year. Another thing: I never have seen placenta previa centralis with a full grown child. In my opinion the former precludes the latter. It is not possible for a uterus with placenta previa centralis to grow to the size of a full term pregnancy, without using up, without extending the lower uterine segment and so causing hemorrhages four to six months before term.

With reference to the case Dr. De Lee has reported I will state that the danger of a colpeurynter, when there is a considerable

weight attached, is equal to that of a careful extraction. Therefore, we always advise, even if the body of the child is born, not to pull at its feet, but let the head of the child be born by itself. Three-quarters of all cases of placenta previa, in which I had occasion to see the post-mortem, died from rupture of the cervix.

There are doubtless some hopeless cases in which the obstetrician will seriously consider the question of a vaginal Cesarean section. A few weeks ago I was called in by a doctor to a case of placenta previa. The woman had been bleeding profusely. She had hardly any pulse, her breathing frequency was about 40 times in a minute, the os was well dilated for two fingers, the membranes not yet ruptured. It was perfectly evident that this woman was not able to stand any considerable loss of blood. The child was dead. In this case I thought of performing the vaginal Cesarean section in order to save the woman a greater loss of blood, and in the purpose to be able to control the hemorrhage perfectly. However, I decided to perform the version in the hope that the woman would have more time to recover from her acute anemic condition. Generally it takes about six to eight hours before the child is born in such a case. Right after performing the version the woman collapsed, but regained consciousness again. We held the foot of the child all the time and the woman did not lose any more blood after the version. She recovered somewhat. However, within three hours the child was born. The physician, who attended the case, at my suggestion removed the placenta manually immediately after the child was born, but the woman in her anemic condition was not able to stand the least loss of blood. She died within half an hour.

DR. JOSEPH B. DE LEE.—*A priori*, I would think vaginal Cesarean section would be contraindicated in placenta previa. Vaginal Cesarean section opens up the veins of the lower uterine segment, and in placenta previa the veins are unusually large in the lower uterine segment. Vaginal Cesarean section at term is attended with a great deal of hemorrhage, and a great many reporters say that ligatures and sutures are required before the uterus can be opened, and hemorrhages controlled by advancing artery forceps. How much greater would this be with a placenta previa located in the lower uterine segment? Dührssen's case of vaginal Cesarean section, as I understand, was on a woman five or six months pregnant.

DR. HOLMES (closing the discussion).—Strassmann, in his study of 231 cases of placenta previa, assumes that there were no cases of rigid os, that the instances of rupture of the cervix were due to too rapid extraction, not to cervical rigidity; he states that the lower uterine segment is as little suited for the implantation of the placenta as is the tube, and ruptures easier. The trouble lies very largely, as I have brought out in my paper, that too many operators do not wish to wait in placenta previa cases: they are too selfish to sacrifice personal comfort and time necessary to properly treat the woman afflicted with placenta previa, so they

interfere with questionable procedures and do the wrong thing by too hasty action. At the Atlantic City meeting of the American Medical Association, when this same theme was brought up for discussion, I stated it was an obstetric crime for Dr. Deaver to have performed a Cesarean section because he was not versed in version; as I see it, he had one of the most fatal diseases of womankind to treat, in a branch of medicine he had neglected, requiring peculiar operative procedures, yet he chose to do the wrong thing rather than turn the case over to an approved obstetrician. As was remarked once before in this Society in another connection, the successful outcome of the case was due to good fortune and asepsis, nothing else.

As to outlining the different methods of treatment: It was beyond the scope of my paper to present the best procedure for placenta previa cases. By the time I got through compiling my statistics I dreamt of blood, I saw it day and night until I was heartily sick of the growing figures.

I think I put clearly and positively enough that there was such a thing as a rigid os in placenta previa, but I think it is evident that it must be *exceedingly rare* when over six hundred cases are reported without such complication—these figures were obtained from all the reports obtainable in which the dilatability of the os was mentioned, and were consecutive. I am convinced that these so-called cases of rigid os are very largely merely cervixes of pregnancy, cervixes not yet fully prepared for dilatation: just because a man sticks his finger into the os of a pregnant woman, and finds the cervix resisting, does not warrant his making a deduction that the cervix is rigid: this is equally true in cases of placenta previa as under normal conditions.

I did not take up the subject of vaginal Cesarean section as it is not germane to the subject. I hardly can see its use for placenta previa—there is enough hemorrhage as it is without making more by a cutting operation.

As I pointed out in my paper, the Church does not demand the sacrifice of the mother for the child, so Cesarean section is not a theologic necessity in the treatment of placenta previa; as the obstetric treatment aims to preserve both it meets no opposition from the sociologic standpoint either.

I may say in corroboration of what Dr. Schmauch has said about placenta previa centralis, that many articles had the caption, or in the text, that the case was one of complete previa, yet in subsequent discussion they furnished conclusive evidence that the term was laxly applied.

DR. JOSEPH B. DE LEE reported a

CASE OF TRAUMATIC RUPTURE OF A PREGNANT UTERUS.¹

DR. FRANKLIN H. MARTIN.—I think Dr. De Lee should be criticized for his course in this case: (1) For not going to the

¹See Paper, p. 814.

case on being called by the interne; (2) for waiting, and in consequence occasioning a long delay before the operation was performed. In a case of obstetrics, where an operation is to be done for ruptured uterus, an abdominal surgeon or gynecologist should be associated in the case, and the operation should be performed as early as possible. Certainly, that should have been the case here.

DR. DE LEE (closing the discussion).—In response to Dr. Martin's jocose remark, I may say this: I sent to the case a man who is a graduate of one of our best schools, who has taken an internship in a good hospital, who is quite a surgeon himself, and who is a good diagnostician. He has had a large number of normal cases of labor, and has had quite a large pathological experience. He is capable of doing more than the average doctor. The interne reported to me that the woman was not in a bad condition; the flowing had stopped; she was holding her own. I did not consider it necessary to see the case, so I sent my assistant. The course of the case was one of improvement; the woman rallied; the pulse came down from 140 to 120. She received salt solution. A telephonic report from my assistant was to the effect that the woman had received too much bromide and opium. She had received 140 grains of bromide, and three-quarters of a grain of morphia. The case was under the charge of this man, but the responsibility Dr. Martin puts on me. The man was above the average in ability, and the case would have taxed the diagnostic abilities of any man here if he had had it at the time this man had it. When I came into the case the diagnosis was easier. Regarding the delay in operating, I left the house at half past eight, and the woman was delivered before quarter to ten, which is quick enough action for any combination of obstetric and gynecologic ability.

RUDOLPH WIESER HOLMES, M.D.,
Editor of the Society.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting of April 15, 1904.

The President, J. Wesley Bovée, M.D., in the Chair.

DR. I. S. STONE presented the following specimens:

CANCER OF THE UTERUS.

Mrs. G.; white; age, 59; was admitted into Columbia Hospital on March 16, 1904. She had symptoms of cancer of the uterus for nearly two years, but the disease was not detected until just before her admission to the hospital. The cervix was not involved and this must have caused the delay in making a diagnosis. Her only hope depended upon prompt resort to hysterectomy. On March 19 we removed the uterus by the combined vaginal and abdominal methods. After removing the uterus a careful search was made for evidence of local extension of the disease, with the result that no enlarged glands were found in the vicinity of the cervix. But, unfortunately, there was evidence of extension along the course of the ovarian artery and in the direction of the mesentery and a recurrence would have begun at this point if the patient had lived. There were no reasons to anticipate any complications after the carefully conducted operation. The patient bore the operation very well indeed, although it lasted for nearly three hours from the commencement of the anesthesia. During two hours of this time she was in the Trendelenburg position, and I am inclined to think this had something to do with the fatal result which occurred at the beginning of the third day. There was but little shock following the operation and at no time did her pulse become weak, irregular or intermittent, nor was its frequency much, if at all, above normal, its range being in the seventies as a rule. After an exceptionally comfortable stay of two days in the recovery ward, she was returned to her room where she died almost instantaneously about one hour afterward. Death occurred while the nurse was giving the usual attention to the patient and while engaged in conversation. The appearance of the patient and her inability to speak, attracted the attention of the nurse, who promptly sent for the house physician, but respiration and heart action had both ceased before his arrival a few moments later. The entire interior of the cavity of the body of the uterus is involved although the organ is not greatly enlarged. The small cyst attached to the broad ligament contains a peculiar substance which is apparently not organized, and the pathologist was unable to tell its real character. Owing

to the absence of friends of the patient, we were unable to obtain permission to make an autopsy, and the cause of death remains very obscure.

A CASE OF DOUBLE PYOSALPINK.

Mrs. R., white; age 39; widow for thirteen years. The patient was admitted to Columbia Hospital on March 18, 1904. She had many of the symptoms of "grippe," or some similar constitutional disturbance, the nature of which was obscure. Her temperature was 102° or over; pulse 120; with much pain on the left side which at first appeared to be pleuritic in character. I failed to discover friction sounds, however, and concluded that the pain was chiefly muscular, which proved to be the case, as, in a few days, I was able to operate upon her safely and remove the specimens which are now presented. Her physician had found the pelvic disease; had correctly diagnosed the real nature of the attack and pronounced it due to infectious mischief within the pelvis. But I was somewhat skeptical on account of the systemic conditions present, and determined to wait an improvement in these symptoms before operating. The operation was not difficult and the pus sacs were removed without rupture. The patient made a very prompt and uneventful recovery from the operation, the pulse and temperature immediately becoming normal and remaining there during her convalescence. Examinations of the blood made previous to the operation failed to discover any cause for the acute attack and postoperative investigation of the pus in the annexa revealed no bacterial origin for either the local or the constitutional symptoms. The larger specimen was removed from the left side and is one of the largest pus tubes ever seen intact.

DR. R. A. SHANDS presented

A 500-GALLON OVARIAN CYST.

Miss B., aged 80 years; never married; had always enjoyed exceptionally good health. Was an inmate of a Church Home for the last ten years of her life.

Tumor was first noticed early in the year 1896. I first saw the patient January 5, 1897. The diagnosis of a large ovarian cyst, which had been previously diagnosed by Dr. A. F. A. King and Dr. George Byrd Harrison, was confirmed; the advice that had been given by these gentlemen to operate for its radical relief was also concurred in, but as the patient absolutely refused operation, it was decided to tap the cyst, hoping that later she would consent to the operation. This she never did, hence the tapping was kept up until within a few days of her death, as related below.

The first tapping was done on the 5th of January, 1897, when 15 quarts of an amber-colored fluid was withdrawn; this process had to be repeated in about 3 months, when a like amount was drawn off.

During the first year it was tapped six times, the quantity of

fluid was about 15 quarts each time. After this the period of time between the tappings decreased very rapidly until during the last 18 months of her life it had to be done regularly every ten days. The amount of fluid drawn at each tapping varied very little, it being always about 15 quarts.

The patient enjoyed exceptionally good health for one of her age and died February 4, 1904, from emaciation and infirmity of age. This patient was a rather large woman and quite robust at the time I first saw her, but lost flesh gradually, until, at the time of her death, she was as near a living skeleton as one could imagine.

The total number of tappings in this case was 130, which yielded 1,950 quarts, or about 500 gallons.

DR. ADAMS said Dr. Stone's first case was, from a medical standpoint, exceedingly interesting. Many of us meet with cases of sudden death from unexplained causes. In most of such cases death is due to embolism, cerebral or pulmonary although, if pulmonary, death is usually not so sudden.

DR. BALLOCK thought the pulse during operation had been unusually slow.

DR. BOVÉE suggested that probably moving the patient might have caused the embolism.

DR. BEHREND thought this case would indicate some affection of the cardiac or vascular system. In the young woman mentioned by Dr. Stone, the death was more probable what is known as "thymic death." The condition has been investigated more abroad, especially in Vienna, than in this country. It occurs in children and adults, and in conditions that would not usually be followed by death, such as fright, or minor operations. The thymus gland is present and the lymph nodes generally are enlarged. The cases are usually regarded as scrofulous. He cited a case of adenoids in which the child after a few whiffs of ether died. In the condition there is hypoplasia of the arterial tree, a diminution in the size of the vessels. One particularly interesting case was a child of Prof. Langherhans which died suddenly after an injection of antitoxin.

DR. BOVÉE said the specimen taught two important lessons: (1) hemorrhage from the uterus due to cancer of the body is frequently diagnosed as hemorrhage due to the menopause, and (2) in cancer of the body of the uterus the operation should be done from above.

DR. MILLER thought the symptoms in Dr. Stone's second case were probably due to the pelvic condition. The fact that the fever subsided and general symptoms improved would tend to show this.

DR. STONE said the case reminded him of cases which he has seen of chronic appendicitis where exacerbations of temperature have been due to influenza.

DR. COOK thought it exceedingly remarkable that Dr. Shands' case secreted 3 pints of fluid in 24 hours.

DR. BOVÉE had seen the woman with Dr. Shands and had advised operation, for he thought from the condition of her arteries and the little reaction following removal of fluid, that the tumor could have been successfully removed and the specimen showed this to have been the case. Dr. Shands remarked that the urine had been scanty, although the patient had drunk large quantities of fluid.

DR. MILLER read the history of

A CASE OF STREPTOCOCCIC PELVIC EXUDATE IN WHICH THE STREPTOCOCCI WERE ALIVE SIX YEARS AFTER INFECTION.

A white woman, 26 years of age. Previous history good. Gave birth to a child in January, 1898, breech presentation, severe labor. She was confined to bed for 3 months with puerperal fever and was told she had an abscess. No other child or miscarriage. Slight leucorrhea. Menses variable in amount, generally profuse and irregular. Pain from time to time in back and pelvis, at times severe. She was operated upon at the Garfield Hospital April 23, 1901. At the time of operation urine albuminous and contained hyaline casts. At the operation the abdomen was opened and a large solid mass was found in the pelvis, "probably springing from the right sacro-iliac synchondrosis." The diagnosis was sarcoma (inoperable). She recovered from the operation.

During the summer of 1901 had an attack of dysentery. In November, 1901, was emaciated, anemic, no fever, pulse 102; intermittent pain in the pelvis and back and tenderness in the right iliac region. There was a small reducible hernia at the lower angle of the wounds. There was a very tender tumor mass ($4 \times 2\frac{1}{2}$ inches external measurements) in the right iliac region. The patient improved slightly under general tonic treatment for three weeks. From December, 1901, to June, 1902, she was treated by hypodermic injections of Coley's mixed toxins. The injections were given 2 to 3 times a week, beginning with m.i and increasing the dose gradually to m.xx . At times no reaction, at times reaction slight, and occasionally reaction severe (temp. 101° F., and considerable prostration). During this time the tumor diminished to about one-third original size and the patient improved very much in general health and had no local symptoms. Menstruation has been regular since April, 1902. Urinary examinations since 1901 showed albumen varying from a trace to $\frac{1}{6}$ per cent., frequently hyaline and granular casts. Vaginal examination in autumn, 1902, showed a small mass as before described which caused the patient no symptoms. During 1902-1903 she was working most of the time and was under medical treatment only once (for influenza).

The patient now (1904) states that she has had for months attacks every few weeks of swelling of abdomen, with extreme tenderness in the pelvis. Hernia somewhat enlarged and causes some discomfort, urine albuminous and contains casts.

I saw the case in the summer of 1902 in consultation, and thought it to be a case of streptococcic exudate. She entered the University Hospital and was operated upon April 12, 1904. The following notes were made immediately after the operation: The cervix is very high in pelvis and bilaterally lacerated. The body of the uterus was not definitely outlined, but it was apparently much enlarged and was connected intimately with an irregularly shaped, dense mass which lies in both broad ligaments, surrounds the rectum, and is largely retroperitoneal with the intestines, omentum, uterus, tubes, and ovaries adherent over it. Several cyst-like bodies the size of a lemon, filled with translucent yellowish or straw-colored fluid, protruded from the mass into the peritoneal cavity. One mass in the left side resembled an ovarian abscess the size of an orange and was yellow in color. Hemorrhagic adhesions surrounded it almost entirely. The masses, posteriorly and in the right broad ligament, felt extremely dense and board-like. It was not feasible to get into the mass from the exterior of the abdomen extraperitoneally, so an opening was made posterior to the cervix with scissors into the dense exudate and then the exudate was invaded by means of the fingers bluntly separating tissues. A pocket of offensive pus containing several ounces, in the left broad ligament, was opened. There was at the same time a discharge of pus into the rectum. No communication could be detected between the pus pocket and the bowel, although there probably was one. No pus could be obtained from the right broad ligament. The abscess cavity was packed with gauze, the hernial sac removed and abdomen closed. Examination of the pus by Dr. Butterfield showed chains of streptococci, and cultures gave a pure growth of the streptococcus pyogenes. Three weeks after the operation (May 2) the mass has diminished considerably in size and the patient is entirely free from pain and has no fever.

DR. SHANDS asked what effect the streptococcic serum would have on the process.

DR. BEHREND said that Coley's toxins are not a serum but a sterilized culture of the streptococcus and bacillus prodigiosus. He thinks it very interesting to know just what effect the toxins would have upon the infection. It was comparable to tuberculin which is now, however, used only for diagnosis. The use of the toxins may tend to increase the immunity, but the use of the anti-streptococcic serum would be more rational. He is also interested in the differences in the gonococcus and the streptococcus. The former is an organism largely confined to the mucous membranes and therefore largely not dangerous.

DR. MILLER stated that he was interested in the case for several reasons: First, it was interesting to note that a streptococcic pelvic exudate so closely resembled a new growth that it was mistaken for a sarcoma after the abdomen had been opened; second, that the use of the toxins under a mistaken diagnosis had apparently for a time caused a diminution in the size of the mass

and an improvement in the symptoms of the woman, and, third, that the micro-organisms were alive after six years and presumably capable of causing infection. He was daily becoming more convinced of the importance of diagnosing before operation the nature of the pelvic infections by their etiology.

DR. VAN RENSSELAER read an essay on

ABSCESS OF THE LIVER.

DR. BALLOCK thought the paper timely as abscess of the liver is more frequent than is generally thought and will become more so, now that so many Americans are sojourning in tropical climates. He has seen several among negroes. There are other routes of infection than through the portal circulation, *i.e.*, embolic infections, infections along the bile ducts, infections along the peritoneum, through the cellular tissue and lymphatics. He would draw a sharp line between endogenous and exogenous infections. The abscesses are all secondary. It is important to recognize the condition before enlargement of the organ. The chief symptom upon which we have to base the diagnosis is pain and this may not be marked until the abscess reaches the peritoneum. Numerous instances have been observed where the abscess ran their course without pain. A persistent leucocytis is a valuable sign. The general reactions, as anorexia, or fever, are not pathognomonic. The irregular range of temperature should put us on our guard. The use of the aspirating needle before the abscess is opened is objectionable for three reasons, first, if pus is present we are liable to spread infection to the peritoneum; second, the liability to puncture the colon and, third, the needle may reach the pus and not withdraw it and if pushed into another part of the liver it will infect this also. He wishes to emphasize that the incision should be made sufficiently low. If made too high, as the liver reacts it may be difficult to insert the drainage tube.

DR. BEHREND said the diagnosis is of greatest importance and as it rests upon so few pathognomonic signs it makes it necessary to use all possible means at our disposal. A leucocyte count is of extreme importance, but it sometimes leaves us in the lurch. He has seen cases of long standing where there has been no leucocytosis. In the majority of the cases you may depend upon this sign. It is stated that there is a relative increase in the polymorpho-nuclear cells. He would refer to the examination of the stool for ameba. In a certain proportion of the cases there is an intermittent fever of marked regularity. An enlargement, pain in the shoulder, sweats, fever, gastro-intestinal symptoms, every thing may point to a hepatic abscess and an operation may disclose no abscess of the liver at all. Cited a case of Dr. Vaughan's with these symptoms in which there was a pancreatic abscess. A cholecystitis or a cholangitis may simulate hepatic abscess.

DR. SOTHORON spoke of a case where a retroperitoneal abscess followed a carbuncle of the cheek.

DR. STONE thought as long as we regarded liver abscess as a medical disease we were destined to know very little about the pathology. Each case which he has operated upon has increased his knowledge of the disease. He has seen four cases of liver abscess. He would favor much more decided action in suspected liver abscess. Cited a case which emptied through the lung because of delay in operating.

DR. VAN RENSSELAER said that in deep abscess of the liver there was, as a rule, little pain. The value of a leucocytosis, so far as diagnosis of liver abscess is concerned, is doubtful because the abscess is generally secondary to some other condition which causes an increase in the white cells. Aspiration is of much value in deep abscesses. The danger of infection is not materially increased because if pus is found the operation immediately follows. It is difficult to make a differential diagnosis between liver abscess and a collection of pus immediately above the diaphragm.

Meeting of May 6, 1904.

The President, J. W. BOVÉE, M.D., in the Chair.

DR. KELLEY reported a case of

HEMORRHAGIC INFARCTION OF KIDNEY FROM INFECTION.

Mrs. M.; white, æt. 31; married twelve years; six children; one miscarriage one year ago; had no trouble after miscarriage. Menstruation very irregular; always painful. Mother and father died of pneumonia.

During her pregnancies always suffered with indigestion and vomited much. Four months after the birth of the last child she had a very severe attack of muscular rheumatism. Last summer she had pain in her head and pelvis. December 25 she began to flow and continued for three months, passing clots and having pain.

April 24. The patient had been having severe pain in the left side from the nipple to the pelvis, but was very tender over the region of the kidney. She had also pain in the bladder, frequency of micturition and dysurea. Urine contained pus. Temperature 101°. The kidney was enlarged and quite tender. Uterus large and rather soft, appendages apparently normal, not tender. Diagnosis "suppurative pyelonephritis."

Operation April 28. Kidney was found to be large, with adherent capsule. Large, raised nodes, black and very soft, covered the whole cortex. These spots could be scooped out with the finger to a depth of one-half to one inch. It had been my intention to drain the organ, but I decided now to remove it.

On section these raised spots proved to be infarctions, reaching well down toward the pelvis of the kidney. Dr. Carroll pronounced the condition to be one of infarction from infection.

PYONEPHROSIS IN A CONGENITALLY DISPLACED KIDNEY.

Mrs. H., æt. 58; widow; two children; no miscarriages. Began to have pain during micturition five years ago. First menstruation at thirteen; regular; no pain.

Five years ago began to have pain in the pelvis, and after several weeks pain on passing urine, which, on examination, contained pus. At frequent intervals she had fever, chills, and sweats, during which times the pain in the lower abdomen was more severe and the bladder symptoms less severe. After a while the temperature dropped, but the dysurea and cystitis became aggravated.

In October, 1903, she was somewhat jaundiced; temperature 105°, pulse 140. She was having septic chills and sweats daily. The whole abdomen was tender, but more so just over the promontory of the sacrum, where a decided mass could be felt.

The uterus was large, but not tender, yet if it were pushed up against the higher mass there was great pain.

I made a diagnosis of abscess above the uterus connected with the bladder by a fistula.

The temperature continuing high and the patient becoming worse, the abdomen was opened through an old scar in the median line. A large tumor at the brim of the pelvis I took to be the kidney, but after hurriedly feeling in the right flank I thought I felt the kidney in place. The tumor was packed around with gauze and opened, a large quantity of pus escaped. A drainage tube was sewed into the wound with catgut, the tube packed about with gauze and the abdomen closed.

She improved for a time, the temperature going down to 100°. She then began to vomit and died four days after the operation, of obstruction.

Necropsy showed that what had been supposed to be the kidney in its proper place was a lobulated portion of the liver occupying the right flank. The abscess was the right kidney, reaching about two inches above the promontory and following the sacrum deep down into the pelvis. The ureter, three inches long, could not be probed. The kidney was congenitally displaced.

DR. I. S. STONE reported a case of

CELLULITIS CAUSED BY EFFORTS TO EMPTY AN UNIMPREGNATED UTERUS, THE PATIENT THINKING HERSELF PREGNANT.

Mrs. R.; white; æt. 28; married several years and the mother of several children, was admitted into the Columbia Hospital on —, 1904. Mrs. R. had been a widow for only three weeks, was greatly alarmed at her condition and appeared to be unusually frank regarding her statement with reference to her efforts to relieve herself of a supposed six weeks' pregnancy. She is a woman of nervous temperament, is very introspective, exceedingly impressionable and of only a fair degree of intellectual ability. Her fear of pregnancy at the time of her husband's death caused her

to take deliberate though unwarranted steps to produce an abortion immediately afterward. She dreaded to become the mother of a posthumous child and determined to empty her uterus. Having heard of the efficacy of "tents," she procured a supply and introduced several of them at intervals until, finding herself ill from pain, fever and other symptoms of infection, she called upon her family physician, who promptly sent her to the hospital. We found nothing in her uterus and we satisfied ourselves that there really was no evidence of pregnancy.

She was evidently suffering from an infection. There was an induration along the lower border of the left broad ligament and a thickening of the left side of the uterus. Not feeling sure of our diagnosis made from the vaginal side, and thinking to give the patient additional security by inspection from above, we opened the abdomen and thoroughly examined the entire pelvis. The thickened ligament was there and the annexa were not involved. The swelling in the left posterior aspect of the uterus was not understood until we had actually cut into it, and even then we were unable to say from its appearance just what it might be. It resembled a sarcoma or myoma, and was an area of infection in its early stage. We removed a portion for microscopic examination. This swelling was inflammatory and was about the size and shape of a large English walnut. A considerable portion of this area was cut away and the edges closed carefully with catgut. The treatment of the infection in the broad ligament brings up a most important point for discussion. There seemed to be very little benefit to be derived from incision, although we practically opened the peritoneum in our effort to study the conditions present. We found a true cellulitis here and expecting a future abscess or possibly even worse, infection, we placed a drainage tube through the incision into the cul-de-sac and awaited events. The patient had no chill, nor had she the least evidence of streptococcic infection, hence we felt confidence in a favorable outcome of the case. The patient's temperature and pulse indicated only a moderate degree of infection. A few days later an abscess discharged through the cul-de-sac; the patient had no further difficulty and made a quick recovery.

DR. BALLOCK thought the infection in Dr. Kelley's first specimen was apparently confined to one kidney, and the question was how it occurred. If it came by way of the blood-vessels it was curious that there was no infection in any other part of the body. While emboli in the vessels of the kidney cause infarction (the vessels being terminal vessels), it seemed unaccountable that the infection should have been confined to the kidney.

DR. FRY said in chronic infections the vessels are usually obliterated and the infarcts might have occurred in this manner.

DR. MILLER said that the infection of the infarcts was probably secondary to their formation, and as the urine contained pus the bacteria could have gained access from the pelvis of the kidney. Renal infarcts are not very uncommon and, if small, may cause

no marked symptoms. Pain in the region of the kidney and blood in the urine are the two chief signs.

DR. BOVÉE stated that there was no history of the examination of the urine from the other kidney, and the indications were for a nephrotomy with opening up of the pockets of pus.

DR. BALLOCK inquired if Dr. Bovée could feel sure that he had opened up all the pockets. Dr. Bovée replied that he did not consider nephrectomy to have been the best operation. The French seem to prefer a nephrectomy in such cases, while the Americans and Germans a nephrotomy.

DR. STONE recalled a case which he had a few years ago. The patient had fever for six weeks and he could palpate a large kidney. At the operation he had thought it best to remove the kidney, but this was opposed by the patient's physicians and family, so he did a nephrotomy. Contrary to his expectations, the patient improved and finally got well. Under the administration of urotropin the urine became normal.

DR. KELLEY said in reply that had he known just what the condition was he would have done a nephrotomy. The family physician who was present at the operation thought it to be cancer and insisted that the kidney be removed.

DR. G. BROWN MILLER had examined the patient in Dr. Kelley's second case and had found a chronic cystitis, reddened ureteral openings and pus coming from both ureters. His conclusions were based on the history and examination of the bladder, the bladder urine and the urine from the left kidney. He might be criticized for catheterizing the ureter in the presence of an infected bladder. This had been irrigated before examination, and as he introduced the catheter only a few centimeters, he did not regard the danger of infecting the kidney as great. With a strictured ureter and damming back of urine, an infection introduced into the kidney or extension from the bladder is to be greatly feared, but with a normal ureter infection introduced in the lower portion is probably quickly washed away by the descending urine. The urine obtained in this case contained pus and albumin, showing that the kidney was already infected.

DR. BOVÉE thinks it very possible in catheterizing the ureter to infect the kidney.

DR. W. M. SPRIGG read the essay of the evening on

MOVABLE KIDNEY.¹

DR. KELLEY had done a limited number of operations for movable kidney. A question of great importance is, when will a belt relieve symptoms and when is an operation necessary? Gallant advises a straight-front corset. Kelley has never seen a case relieved by a belt, and nearly all cases desire an operation after trying the belt. Ewald and Morris say that there is no relation between nephroptosis and enteroptosis. Pain is relieved by operation in 90 per cent. of cases.

¹See original article, page 767.

DR. STONE said that the symptomatology was the key note of the situation. The symptoms which appealed to him most were the gastric and neurasthenic. The gastric symptoms which accompanied a floating kidney should be treated by a surgeon, and not by a specialist. A bandage will not keep a floating kidney in place. One of his earliest cases showed marked loss of flesh and dyspeptic symptoms. No case that he has ever had showed more improvement as a result of operation, and the relief afforded here has been repeated in a large number of cases. A case of his who is now in the ward, after three weeks, shows marked improvement in her nervous symptoms, and again in nutrition. He has had some failures. One died possibly as a result of the operation. He thinks he removed too much of the capsule and perforated the kidney. The patient died after a few years and the autopsy showed obstruction of the bowel, which was adherent to the kidney. In a few cases the prolapse of the kidney has recurred. He has had two cases where there was relief of epileptic seizures after stitching up the kidney.

DR. FRY called attention to the differential diagnosis between an enlarged gall-bladder and floating kidney. One of the first indications for operation is emaciation. When the patient is nervous, has lost flesh and suffers with backache the operation promises well. He remembers a case where suppuration followed the operation and the woman became melancholic and committed suicide. Every precaution should be taken to prevent suppuration. Rubber gloves should be used, and only absorbable sutures employed. The kidney is always attached too low, as it is impossible to place the sutures sufficiently high.

DR. J. T. JOHNSON said it was interesting to learn that there had been collected by the essayist 180 operations for movable kidney without a death.

DR. H. L. E. JOHNSON has had a very limited experience with cases of floating kidney. A dozen cases would represent all he has seen in hospital work. He has never operated on a case. The majority of the symptoms are largely those of suggestion produced by the use of a bandage, which, as a rule, is utterly useless. He never tells a patient that she has a movable kidney. He cited a case where intestinal disturbance was pronounced, due to a movable kidney. He has never seen a case where he could attribute symptoms to a floating kidney.

DR. BOVÉE said that, if we consider the pathological side of the question, we cannot help but think that sooner or later an operation is necessary. The work of Edebohls and Ferguson has proven that practically all floating kidneys show pathological changes. An abnormal blood supply probably accounts for the failure of the operation to relieve symptoms in some cases. In some cases the pressure of the ureter on the artery causes the pain, and should be relieved by cutting off the ureter and grafting it on the other side of the artery, or by placing the kidney in such a position as to relieve this pressure.

Meeting of May 25, 1904.

The President, J. W. BOVÉE, M.D., in the Chair.

DR. FRY presented the following specimens:

MULTIPLE FIBRO-MYOMATA OF UTERUS WITH AN INTRA-UTERINE POLYPUS.

Patient, widow, aged 37 years, had never been pregnant. Complained of pain in lower left quadrant and uterine hemorrhages. Supra-vaginal hysterectomy. Appendix constricted in middle and adherent, removed. Pulse did not rise above 26 during convalescence.

DOUBLE PUS TUBES.

Patient married. Husband had had gonorrhea seven years before marriage. April 18th double salpingitis developed. May 14th abdomen opened. Right tube adherent in Douglas's sac and to omentum and bowel. Adhesions yielded readily and tube delivered intact. Several ounces of pus escaped into the peritoneal cavity from rupture of left tube during manipulation on the right. Right tube and ovary removed; a section of healthy ovary and about one inch of left tube removed. Abdominal cavity cleared with gauze; the infected area covered with gauze and drain carried into the vagina. Drainage free and gauze removed fifth day. Patient made good recovery.

DR. KELLEY presented

AN OVARIAN CYST WITH TWISTED PEDICLE.

Mrs. D., æt. 65, widow; twice married, two children. Previous health good. Present illness began three years ago with a severe attack of pain in the abdomen; diagnosed indigestion. These attacks recurred at intervals of three or four months. This time her physician diagnosed her ailment "falling of the womb." April 20 she came to Washington, and was seized with a sudden sharp pain while attending a meeting of the D. A. R. A physician saw her and she was relieved with hypodermics of morphia. This physician, Dr. John Stewart of this city, diagnosed a tumor. I saw her April 28, and made a diagnosis of ovarian tumor with twisted pedicle. I found a very large, fat woman lying on the left side and refusing to turn over, saying it gave her intense pain. Her temperature was 102, pulse 100. A tumor occupied the left abdomen, reaching somewhat above the umbilicus. It was cystic and firmly adherent to the left side of the abdomen. Patient wished to return to the South for operation, but on May 7 there was a return of fever and pain and she agreed to be operated upon here. She entered Sibley Hospital and an ovarian tumor, weighing about 19 pounds and having its pedicle twisted to complete revolutions, was removed. The cyst, after the twisting, gravi-

tated to the left, the patient lying on that side, and became adherent there; the cyst wall was necrotic, and adherent to everything with which it came in contact. It contained a dirty, dark fluid, old blood. There were three locules.

DR. FRY asked, in presenting his specimen, concerning the advisability of leaving an ovary in a woman of 37 years who desired to be married.

DR. STONE doubted the propriety of leaving an ovary behind in such a case. Cullen's work showed that a number of supposed fibroid tumors are malignant and in such cases there are apt to be metastases in the ovary. As to the sexual side he was not prepared to make a positive statement.

DR. KELLEY stated that in his experience the neurasthenic symptoms are more pronounced in such cases when an ovary is left behind than when one is removed.

DR. FRY said that his idea in leaving the ovary was to prevent atrophy of the vagina. He was not in a position to positively oppose Dr. Kelley's statement, but was inclined to disagree with him. If the uterus is left behind and the ovaries are removed the neurasthenic symptoms are more marked. Ovarian extract has been given but has not been satisfactory.

DR. FRY asked the opinion of the Society about the method of caring for the peritoneal cavity in pus cases. He does not believe in using Clark's method of leaving salt solution in the cavity but advocates sponging out the pus without contaminating the cavity more than possible. He uses drainage tubes instead of gauze, but uses the latter at times as tampons. In this case, however, he used gauze to prevent the intestines from becoming adherent to a raw area.

DR. BOVÉE stated that he had not used abdominal drainage for five years. He drains through the vagina, makes the opening larger than the gauze and pulls out a little of the gauze each day for several days.

DR. STONE congratulated Dr. Kelley upon making the diagnosis and thinks gynecology and surgery has advanced sufficiently so that one should make a diagnosis in such cases.

DR. BOVÉE asked Dr. Stone how he prevented rupture where a pus tube is adherent to other structures.

DR. STONE replied that the fimbriated end of the tube was generally adherent to the ovary or intestine, and by leaving this to the last, one is less likely to cause rupture.

DR. BALLOCK read the essay of the evening,

THE LIMITATIONS OF OPERATIVE INTERVENTION IN CANCER OF THE CERVIX UTERI.¹

DR. STONE.—Dr. Ballock has answered the question, Shall we operate at all in cancer of the cervix? We may hope to cure in early cases and may prolong life in advanced ones. The two

¹See original article, page 737.

extremes on this question are represented by Mackenrodt and Baldy. In Germany the clinics are such that they get cases at an earlier period than in this country. He does not wish to endorse Baldy's statement that all die. He has a few cases who have been cured—two private cases, operated upon, one in '96 and the other in '97, are living and well after vaginal hysterectomies. If he had such results as many state they have he would give up hysterectomy for cancer of the cervix. As to extension, he thinks Kelly's position from a practical standpoint must be right. If the statistics given by Sampson are correct he does not understand why they continue doing hysterectomies at the Johns Hopkins Hospital. He believes in cauterization for cancer of the cervix. He applies zinc chloride because it has an elective affinity for soft or cancerous tissue; and used it also inside the uterus.

DR. FRY stated that one reason why statistics in Germany are so good is that they get the cases at an earlier stage. He does not believe in the radical operation, *i.e.*, in attempting to dissect out the connective tissue of the pelvis. It is impossible to dissect it all out. In this operation there is a mortality of 12 to 15 per cent. Baldy gives only 5 per cent. of cures. The lymphatics run laterally along the base of the broad ligament and no better results are obtained from vaginal hysterectomy than by high amputation of the cervix. He thinks the best method is that of Byrne, of Brooklyn. He (Dr. Fry) has practised galvano-cautery operations for years and prefers this method. He does the entire operation with the galvano-cautery knife—a high amputation. If this is done early you get as good results by this as by hysterectomy. In advanced cases he burns the tissue away until the uterus is a mere shell.

DR. MILLER.—The efforts of the profession should be directed to making an early diagnosis. This can only be done by careful examination of women who have uterine hemorrhage and in doubtful cases by the histological examination of portions of the tissue by a competent pathologist. Instead of giving up hysterectomy for palliative measures, he would advocate that the operator so perfect his technique as to give the patient the best chance for a recovery from the operation and a lasting cure. There are few operations requiring more surgical skill than hysterectomy for cancer, as done by Wertheim, Krönig, Sampson and others, and they have all found that with a larger experience and a more perfected technique that they can operate on a greater percentage of cases, have a lower immediate mortality, and a larger number of cases of cures.

DR. BOVÉE stated that the first radical operation was done by Wertheim and suggested by Emil Reis. His (Bovée's) first step is to ligate the internal iliac arteries. He separates the vagina from above and cuts it off from below. He asked Dr. Fry that if, as he stated, the disease spreads through the base of the broad

ligament, how he, with the cautery, removed the cancer here. He believes in the radical operation except that he does not believe in Sampson's modification. When there is any fixation of the uterus, even if inflammatory in origin, the operation should be only a palliative one. He does cautery operations in advanced cases.

DR. STONE asked how the ligation of the arteries would have any curative effect. It is well to ligate them to control hemorrhage during operation, but he sees no hope of curing the disease by such a procedure. He asked Dr. Bovée his latest results in hysterectomy by the Werder method.

DR. BOVÉE stated that he had not followed all cases. He cited one who was alive six years after the operation where he resected the ureter. He can recall at least eight cases alive after six years.

DR. BALLOCK stated that he did not wish to state that cancer spread by glandular metastases alone, but to such an extent as to make Kelly's operation not seem to be based on sound surgical principles. The mortality of the radical operation is steadily decreasing. He does not wish to be understood as believing that cancer is a general disease, but it is extremely suggestive of such.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

Meeting of October 5, 1904.

The President, EDWARD MALINS, M.D., F.R.C.P., in the Chair.

DR. J. M. MUNRO KERR read a paper on

CERTAIN DETAILS REGARDING THE OPERATION OF CESAREAN SECTION
IN CASES OF CONTRACTED PELVIS, BASED UPON A SERIES
OF THIRTY CASES.

The author considers first the maternal mortality which, in his own cases, with two deaths, works out at 6.6 per cent. He then considers morbidity, as based upon a temperature of 100.5° on more than one occasion, and finds it is 26 per cent. The two fatal cases are detailed. In one the patient died on the fifth day; the post-mortem examination revealing the existence of septic peritonitis. In the other the patient died the day after operation of collapse. At the post-mortem examination a large quantity of blood was present in the abdominal cavity, and two or three of the uterine stitches were found untied.

The author then discusses the three different methods of treating the uterus after removing the child; (a) removal of the uterus by supra-vaginal hysterectomy; (b) retention of the uterus and sterilization by resection of the tubes; (c) retention of the

uterus without sterilization—the conservative Cesarean section. From the statistics of himself and others he comes to the conclusion that the best results are obtained by supra-vaginal hysterectomy; there is little time for preparing patients for operation.

The arguments for and against the conservative operation are considered: (a) From the ethical standpoint; (b) from the standpoint of the danger to the patient of the repeated operation; (c) from the standpoint of the danger of rupture of the uterus in a subsequent pregnancy. From a full consideration of these, he believes that with patients who come under one's care before labor the conservative operation in a large number of cases is indicated.

Finally, such matters as the preparation of the patient, the time for operating, the controlling of hemorrhage and the suturing the uterus are briefly referred to.

THE PRESIDENT referred to local influences which accounted for a large number of cases in particular localities. Twenty years elapsed between his first case and a second requiring Cesarean section for pelvic deformity. Two years ago he had performed the operation six times in fifteen months. Four of these were for contracted pelvis, two for carcinoma. All the cases recovered from the operation, and all the children were delivered alive.

DR. C. E. HERMAN considered that Cesarean section, when performed early, was the simplest and easiest of all abdominal operations, because the parts concerned were healthy and normal; there were none of the difficulties that were sometimes met with in the removal of tumors. Cesarean section, performed early, ought to have no mortality at all, and was a safe operation, but was not so if postponed until the patient had been exhausted by protracted labor. He thought that, for statistical purposes, the cases should be divided into two groups. He considered that it was for the patient to decide whether she would be sterilized or not, and that the way to do it was to remove the uterus.

DR. W. S. A. GRIFFITH stated that there must be many operators who, like himself, had not published results because they felt that the operation of Cesarean section by competent operators for contracted pelvis under favorable circumstances should have no mortality, and he believed that he had not lost a single case. He did not think a vaginal douche at all necessary in cases in which there was no evidence of infective inflammation. As regards sterilization of the patient, he had invariably done it by ligature of the tubes with fine silk.

DR. AMAND ROUTH agreed with Dr. Herman as to the advisability of dividing the cases into two groups. As regards the choice of operation, cases should be divided into two classes: (1) where the chance of another child is desired; (2) where it is decided to prevent further conception. In the first class, the risks should be placed fully before those interested, and if they still desired it, a conservative Cesarean section should be performed. Such risks were, briefly: Secondary hemorrhage and

sepsis after the primary operation, yielding of the cicatrix and rupture during the next pregnancy, an 8-per-cent. mortality in repeated Cesarean section, and the possibility of a disadvantageous environment when next at full term. If sterilization were decided upon, he held that removal of the ovaries was not advisable, owing to the proved value of their internal secretion, and that resection of the tubes did not always cause sterility; and he considered that the claims of hysterectomy as a means of sterilization should in each case be seriously considered, owing to its smaller mortality, the ease of operation, the lessened risk of secondary hemorrhage and sepsis and the certainty of sterilization.

DR. HERBERT R. SPENCER referred to the diminishing mortality from Cesarean section. His own experience of the operation was limited to eight cases (six with contracted pelvis and two with obstruction by scars). The patients all recovered. He had also performed the operation four times for tumors; one of the patients died with kidney disease. In all cases of simple contracted pelvis which were not infected he performed the conservative operation without sterilization of the patient; for tumors and for infected uterus, and for uncontrollable hemorrhage, hysterectomy was sometimes required. He thought that, as the cervix was likely to be implicated in infected cases, it would be better to remove the whole uterus by total abdominal hysterectomy. He held the opinion that the question of sterilization should be decided entirely by the doctor, and that his duty was to deliver the woman and restore her as nearly as possible to a natural condition. If the patient became pregnant again, the responsibility was not the doctor's, whose duty was to repeat the Cesarean section, which experience showed to be very safe. He thought it was not the business of a doctor to advise the use of preventives. With regard to the sutures employed in the conservative operation, he preferred silk, owing to the safety of the knot.

DR. C. J. CULLINGWORTH said that he had altered his opinion on the ethics of sterilization, and was now in agreement with Dr. Spencer on the subject. A woman possessing one living child might consent, or even ask, to be sterilized, rather than have again to face a serious operation; but supposing her one child died; she might deeply regret having submitted to sterilization. Besides, a patient's husband might die, and the fact of her incapacity to bear a child might stand in the way of a second marriage. It had been shown that there was as little, if any more, risk in a second or third Cesarean operation. He considered that undue stress had been laid by the author on danger of infection from the vagina. He doubted the soundness of the advice emphasized in every text-book to avoid the mucosa in suturing the uterine wound. He considered catgut sutures preferable to others which were non-absorbable.

DR. MUNRO KERR, in reply, pointed out that the prevalence of rickets among the working classes accounted for the large number of Cesarean sections in Glasgow. He saw no great disad-

vantage in including the mucosa, and thought it was of very great importance to stitch deeply and to include the whole thickness of the uterine wall in the suture. He thought it likely that, if the sutures were tied very tightly, the wound might be partially deprived of its blood supply, and that a less firm cicatrix might result.

REVIEWS.

A TEXT-BOOK OF NERVOUS DISEASES AND PSYCHIATRY. For the use of Students and Practitioners of Medicine. By CHARLES L. DANA, A.M., M.D., Professor of Nervous and Mental Diseases in Cornell University Medical College; Visiting Physician to Bellevue Hospital; Neurologist to the Montefiore Hospital; ex-President of the American Neurological Association. Sixth Revised and Enlarged Edition. 8vo. Pp. 690. Illustrated by two hundred and forty-four engravings and three plates in black and colors. New York: Wm. Wood & Co. 1904.

One looks over a new edition of Dana with much the same pleasure that he shakes hands with an old friend. In this, the sixth in the succession, the chapters on nervous diseases have been but little changed. Some comments have been added on cyto-diagnosis and much that was originally included under the head of special therapeutics, but has now become part of general medicine, has been cut out. A new section on psychiatry has been added and follows in its descriptions of the principal types of insanity the modern classification essentially as set forth by Kraepelin. This section is brief and practical and includes in its sixty-four pages chapters on general etiology and pathology, general psychology, general symptoms and symptom groups, methods of examination and diagnosis, general prognosis and treatment, the minor psychoses and psycho-neuroses, dementia precox, melancholia and mania, paranoia, confusional insanity, the organic psychoses, general paresis, the psychoses of senility, of epilepsy, of gross organic brain disease and of trauma.

A TEXT-BOOK OF ANATOMY. Edited by D. J. CUNNINGHAM, F.R.S., M.D. (Edinburgh and Dublin), D.Sc., LL.D. (Glasgow and St. Andrews), D.C.L. (Oxon.), Professor Anatomy and Surgery, Trinity College, Dublin. 1,341 pages. Illustrated with 824 wood engravings from original drawings, many printed in colors. New York: Wm. Wood & Co., 1903.

Too much can hardly be said in praise of this magnificent volume, for it is undoubtedly the best text-book on anatomy. The work of nine men, each an acknowledged leader in the branch of which he treats, it shows a remarkable degree of harmony and

uniformity of style, and a strength and authority of handling in all the departments such as no single author could have accomplished.

The first chapter is devoted to the general principles and elementary facts of embryology, then followed those dealing with the various systems of organs, and finally chapters on surgical and surface anatomy. The numerous illustrations in the text are all new and are nearly all original, having been drawn and engraved especially for this work. They are beautifully executed genuine wood engravings, and possess a charm and graphic quality that no other process can give. They have been printed in colors in every instance where this would add to the clearness of the demonstration.

The paper, typography, and general make-up of the volume are unusually good.

TEXT-BOOK OF HISTOLOGY. By FREDERICK R. BAILEY, A.M., M.D., Adjunct Professor of Normal Histology, College of Physicians and Surgeons, Medical Department, Columbia University, New York City. Pp. 481. Profusely illustrated. New York: William Wood & Company, 1904.

This first edition of a practical text-book of histology deserves a warm welcome. It is essentially a work for the use of students, thoroughly practical, simple in style and clearly arranged. Details of minor importance are everywhere subordinated. The preliminary chapter on general technique is brief, and contains directions for selected methods only. Throughout the volume the portions on technique are placed at the end of each subject, as are references to fuller works on the matter under consideration. The illustrations are, to a great extent, original, and are of excellent quality, a matter of great importance in a book dealing with microscopy. The section devoted to the nervous system is particularly full, as the author has introduced a large amount of anatomy in this chapter, in view of the success with which he has met in teaching this branch of histology in this manner. We can give the work unqualified recommendation for the use of students.

RAILWAY AND OTHER ACCIDENTS, With Relation to Injury and Disease of the Nervous System. A Book for Court Use. By ALLAN McLANE HAMILTON, M.D., F.R.S.E., late Clinical Professor of Mental Disease in Cornell Medical College; one of the Consulting Physicians of the Manhattan State Hospital, etc. Pp. 351. With 15 plates, 2 superimposed charts and 36 illustrations. New York: William Wood and Company, 1904.

There is probably no legalized get-rich-quick method so popular in this and many other cities as suing for damages for alleged injuries received in railroad accidents, and any restraint upon

the shyster lawyer and the fraudulent victim should be welcomed. This volume is intended to aid the medical examiner and the legal profession in differentiating real and simulated injuries of the nervous system. It opens with chapters on accident alalia of neurasthenic and hysterical types, followed by others on injury of the cranium and its contents, of the vertebral column and its contents, on traumatic insanity and peripheral nerve injuries. Methods of examination are described and the possible sources of error shown, and prognosis in relation to the verdict is discussed. Finally, fraud and its detection are considered. Illustrative cases of the author are interspersed through the text.

THE PHYSIOLOGICAL FEEDING OF INFANTS. A Practical Handbook of Infant Feeding, and Key to the "Physiological Nursery Chart." By ERIC PRITCHARD, M.A., M.D., (Oxon.), M.R.C.P. (Lond.). Second Edition. Greatly enlarged and entirely rewritten. Pp. 202. Chicago: W. T. Keener & Company, 1904.

This little volume is an American edition of an English work. It is based upon the percentage system of infant feeding, and the technique and tables of percentage composition employed by the Walker-Gordon laboratories. While this method of milk modification by mixture of varying quantities of milk, cream and water is feasible in families possessing the requisite intelligence and the ability to obtain frequent advice, it is questionable whether the method of mixing top-milk with water, described by a recent author in his "Theory and Practice of Infant Feeding" is not more available, especially in dispensary and tenement practice. The physiological nursing chart referred to in the title is the chart for weight, feeding, etc., of the author. The text is interspersed with illustrative case histories.

KIRKE'S HANDBOOK OF PHYSIOLOGY. Revised by FREDERICK C. BUSCH, B.S., M.D., Professor of Physiology, Medical Department, University of Buffalo. Fifth American Revision. Pp. 862. With 535 illustrations, including many in colors. New York: William Wood & Company, 1904.

A book so well known as "Kirke's Physiology" needs no introduction, after having reached its fifth revision in this country. The chief changes from the fourth revision are in the chapters on blood, circulation, respiration, food and digestion, and muscle-nerve physiology. The subject matter is clearly presented. The illustrations are simple; but they illustrate, which is the function which they are intended to perform. Better a text with such cuts than an art gallery interspersed with words, as are many of the modern medical works manufactured to sell at first sight.

MEDICAL RECORD VISITING LIST FOR 1905. New York: Wm. Wood & Co.

This well-known and favorite list is printed on thin, fine paper and is very compactly gotten up so as to be easily carried in the pocket. The front matter is most carefully chosen and omits that which should better be referred to in the physician's library. There is a very complete list of remedies and their maximum doses in both the decimal and apothecaries systems, brief directions for treatment in poisoning and other emergencies, artificial respiration, signs of death, hints on the writing of wills, etc. The visiting list has space for thirty patients a week, with special memoranda and records for consultation practice, obstetric engagements, vaccinations, deaths, addresses and cash account.

THE PHYSICIAN'S VISITING LIST FOR 1905. Philadelphia: P. Blakiston's Son & Co.

This list is issued in various styles for 25, 50, 75 or 100 patients per week, and with or without dates. It has a good table of remedies, with dose in both metric and apothecaries measure, tables of incompatibility, treatment of asphyxia, treatment of poisoning and gestation tables. There are blank leaves for visiting list, memoranda, addresses, accounts rendered, wants, obstetric engagements, vaccinations, births, deaths, and cash account.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College, Philadelphia, assisted by H. R. M. LANDIS, M.D., Assistant Physician to the Out-Patient Department of the Jefferson Medical College Hospital. Vol. III. September, 1904. Diseases of the Thorax and its Viscera, Including the Heart, Lungs and Blood-vessels; Dermatology and Syphilis; Diseases of the Nervous System; Obstetrics. Pp. 284. Lea Brothers & Company, Philadelphia and New York, 1904.

This volume is the work of the same authors as the corresponding number of last year. Its scope is shown above in the title page. Under the head of obstetrics, particular attention is devoted to eclampsia and puerperal infection.

MEDICAL AND SURGICAL REPORT OF THE PRESBYTERIAN HOSPITAL IN THE CITY OF NEW YORK. Volume VI, January, 1904. Edited by ANDREW J. MCCOSH, M.D., W. GILMAN THOMPSON, M.D. Pp. 331. Trow Directory Printing and Bookbinding Company, New York, 1904.

The current report contains chiefly articles on medical subjects, notably, the Briddon Medal Essay on "Shiga Bacillus Infection in Infants." The papers on abdominal surgery are on the behavior of the costal arch in diseases of the abdominal organs, treatment of advanced general septic peritonitis from appendi-

citis, and on intestinal obstruction following appendicitis operations.

TRANSACTIONS OF THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS. Vol. XVI. 8vo., pp. 483. Rooney & Otten Co., New York. 1904.

This volume, uniform with those that have preceded it, contains the papers and the full text of the discussions which appeared in abstract in the November (1903) and later numbers of this journal.

TRANSACTIONS OF THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION. Volume XVI. 8vo., pp. 486. Edited by W. D. Haggard, M.D., and published by the Association. 1904.

This volume includes all material that came before the society at its sixteenth session, held at Atlanta, Ga., Dec. 15th to 17th, 1903, and contains a large number of valuable and interesting papers. It is one of the most important volumes that the society has issued and sets a high standard for its successors.

A COMPEND OF MEDICAL LATIN. By W. T. ST. CLAIR, A.M., Professor of Latin in the High School of Louisville, Ky.; author of "Cæsar for Beginners." Second Edition. Revised. 1200 pp. Philadelphia: P. Blakiston's Son & Co. 1904.

Designed expressly for the elementary training of medical students, the author presents in this little book the basic principles upon which the medical language is built, a limited vocabulary and careful explanation of terms and phrases used in medicine, and by repeated drills and references fixes these firmly in the student's mind. The present edition contains a few minor changes.

BRIEF OF CURRENT LITERATURE.

DISEASES OF CHILDREN.

Influence of American Pediatric Societies in Promoting the Welfare of American Children.—Augustus Caillé (*Arch. of Ped.*, July) thinks that to shape and promote the public understanding regarding sanitation of the child's environment, and to supervise from a medical standpoint the education of American children should be one of the chief aims of the American Pediatric Society. Some of the more important matters to which he alludes are the following: The overheating of living rooms and sleeping rooms in homes and boarding schools is one of the most fruitful causes of ill health in children. The susceptibility to cold-catching can be markedly reduced by a judicious hardening process in connection with proper alimentation. The use of the cold bath or douche for hardening nurslings is

probably deleterious, but in older children it is beneficial. This susceptibility cannot be reduced in homes in which the living apartments are overheated. One of the most dangerous methods of heating a room is the portable gas stove not connected with a flue, as the products of combustion vitiate the air.

Disinfection and the Sanitary Code. The disinfection of living apartments with filthy carpets and hangings, cracked and papered walls, soiled upholstered furniture and the thousand and one odds and ends, is an illusion as practised in our large cities. The compulsory cleansing of an apartment with soap and water, as practised in some of the larger cities of Europe, has more real value than fumigation with sulphur. One of the principal means of the spread of contagious diseases is overlooked and may be found in the cloak rooms of factories and schools in which the wraps are heaped together. The same may be said of books in schools and libraries. They are frequently soiled with the nasal discharge of the sick, and as yet a practical and thorough method of disinfection has not been elaborated.

One of the most cruel results of the Sanitary Code, as practised in some of our large cities, is transferring children suffering from ordinary eruptive fevers to a suburban department hospital against the will of the parents. If the community demands isolation under all circumstances, the authorities should secure proper accommodations for mother and child.

School Hygiene and School Inspection. The inspection is made during the early school hours, and a child found to be ill is sent home with a card informing the parents that their child needs medical attention. A rational school inspection reveals unsanitary conditions in general and promotes cleanliness and insures attention to parasites, skin lesions and obnoxious habits. One of the features is the early detection of measles, scarlet fever, chicken-pox, whooping cough, diphtheria, tuberculosis, contagious ophthalmia and other communicable diseases. Mouth breathers are detected and children suffering from adenoids, enlarged tonsils or other nasal obstructions are put into the way of receiving proper treatment. There are certain diseases brought about by faulty positions in sitting, writing, study and standing. The early detection of vaginal discharges of gonorrheal origin in young children in day nurseries, kindergartens and primary classes in public schools is of the utmost importance in preventing its spread and its complications, such as contagious ophthalmia, etc.

School Fatigue and Backward Children. The pediatricist may demand for our children less brain gymnastics and more fresh air and exercise. About 20 per cent. of school children are found to be backward solely as a result of some defect of the special senses; dullness due to eye defect or to defect in hearing. Another group is made up of neurotic children with low nutrition and mental dullness. Backward children should have separate classrooms. Children with marked mental and physical

abnormalities or stigmata should be segregated for special training.

Bodily Training of Pupils and School Baths. Playgrounds for children stimulate and guide life in a way that nothing else can do. Their relation to the development of character is very similar to that which the school bears toward the development of mind. The time is coming when the playgrounds will be as seriously considered as the schools are to-day.

School Baths. The provision for baths is of the greatest importance. It provides an opportunity for very poor children to enjoy the wholesome luxury of a bath when otherwise they would not have one; besides it is educational. The lesson of personal cleanliness is one of the fundamental principles of education.

Infants and Children's Hospitals. Medical opinion should discountenance the erection of large institutions in the city to be filled with chronic cases and minor ailments. City hospitals for children in particular are adapted only to acute cases of illness of a severe type. Country and seashore sanatoria and floating hospitals are for the chronic cases. Hospitalism is a complex condition culminating in what is technically known as house infection. The regulations for fighting house infection in the Babies' Ward of the N. Y. Post-Graduate Hospital are: 1. Strict cleanliness of premises and inmates. 2. Thorough ventilation. 3. Sufficient air space. 4. No overheating of wards. 5. Infants are not to be fed by the same hand that attends to the toilet. 6. Soiled linen is to be immediately removed and disinfected. 7. Feeble children are toned up by a change of air (trip to Staten Island, omnibus ride through the Park and sojourn in the Sunbeam playroom and roof garden).

Educational Features in Pediatrics. All children's hospitals should be equipped as places for research and as teaching hospitals for undergraduates, post-graduates and nurses. Clinic rooms should be in direct connection with the out-patient department of hospitals, and matriculates should have the privilege of visiting dispensary patients in their homes.

The Feeding and Care of Children after the First Year.—Rowland G. Freeman (*Arch. of Ped.*, June) says that systematic examination of all children should be undertaken at regular intervals, and should include the level of the shoulders and hips, the spine, eyes, ears and throat. The child, at the beginning of the second year, should be able to stand and walk beside a chair, should weigh about twenty pounds, should measure about twenty-nine inches in length, should have six incisors and should have a stomach capacity of about twelve ounces. This is followed during childhood by an annual growth in length of about three inches each year and a gain in weight of about five pounds each year. At about the sixth year the length in inches and weight in pounds should be equal.

During the second year a child should be fed five times a day, the diet at the beginning including only milk, gruel and orange

juice, to which later may be added an egg, soup, bread and butter, and at the end of the year meat. Beef juice should be used only as a tonic, for it has scarcely any food value, as it is composed for the most part of extractives and water.

During the third year but three meals should be given, with an extra bottle of milk at 10 A. M., the articles of food being continued with the addition of certain vegetables and simple desserts. The best dessert is junket; this may be alternated with rice pudding, custard, or occasionally a little ice cream, if these are not too sweet.

After the third year but three meals a day may be given, including the same articles of food, and throughout childhood about one quart of milk should be taken daily, and the evening meal should consist only of cereal and milk and bread and butter. Both the variety and amount of food must be carefully restricted.

Children during the second year should sleep twelve hours at night and have a morning and afternoon nap each day, and throughout childhood should continue to sleep twelve hours at night with one nap during the day. Provision for the exercise of children should be carefully planned; at first by the use of nursery fence and baby jumper, and later by systematic walks for short distances at a time, and still later by bicycling, horse-back riding and tramps in the country. Throughout childhood they should be kept as much as possible out of close and crowded rooms. When in the house the room should receive ventilation from out of doors, and they should be kept in the absolute open air several hours each day.

Results with Different Kinds of Pure and Impure Milk in Infant Feeding in Tenement Houses and Institutions of New York City.—Wm. H. Park and L. Emmett Holt (*Arch. of Ped.*, December, 1903), give the results of two years' work in part of their investigations, and sum up as follows:

1. During cool weather neither the mortality nor the health of the infants was appreciably affected by the kind of milk or by the number of bacteria it contained. The different grades of milk varied much less in the amount of bacterial contamination in winter than in summer, the store milk only averaging about 750,000 per cc.

2. During hot weather, when the resistance of the children was lowered, the kind of milk taken influenced both the amount of illness and the mortality; those who took condensed milk and cheap store milk did the worst and those who received breast milk, pure bottled milk, and modified milk, did the best. The effect of bacterial contamination was very marked when the milk was taken without previous heating, but unless the contamination was very excessive only slight when heating was employed shortly before feeding.

3. The number of bacteria which may accumulate before milk becomes noticeably harmful to the average infant in summer,

differs with the nature of the bacteria present, the age of the milk and the temperature at which it has been kept. When milk is taken raw the fewer the bacteria present the better are the results. Of the usual varieties over 1,000,000 bacteria per cc. are certainly deleterious to the average infant. However, many infants take such milk without apparently harmful results. Heat above 170° F. (77° C) not only destroys most of the bacteria present, but, apparently, some of their poisonous products. No harm from the bacteria previously existing in recently heated milk was noticed in these observations unless they had amounted to many millions, but in such numbers they were decidedly deleterious.

4. When milk of average quality was fed sterilized and raw those infants who received milk previously heated did, on the average, much better in warm weather than those who received it raw. The difference was so quickly manifest and so marked that there could be no mistaking the meaning of the results. The bacterial content of the milk used in the test was somewhat less than in the average milk of the city.

5. No special varieties of bacteria were found in unheated milk which seemed to have any importance in relation to the summer diarrheas of children. The number of varieties was very great, and the kinds of bacteria differed according to the locality from which the milk came. None of the 139 varieties selected as most distinct among those obtained injured very young kittens when fed in pure cultures. A few cases of acute indigestion were seen immediately following the use of pasteurized milk more than thirty-six hours old. Samples of such milk were found to contain more than 100,000,000 bacteria per cc., mostly spore bearing varieties. The deleterious effects, though striking, were not serious or lasting. At the present time there is in New York City no general sale from stores of "pasteurized" or "sterilized" milk, so that it is here very rare for such milk to be used thirty-six hours after heating.

6. After the first twelve months of life infants are less and less affected by the bacteria in milk derived from healthy cattle. According to these observations, when the milk has been kept cool the bacteria did not appear to injure the children over three years of age, at any season of the year, unless in very great excess.

7. Since a large part of the tenement population must purchase its milk from small dealers, at a low price, everything possible should be done by Health Boards to improve the character of the general milk supply of cities by enforcing proper legal restrictions regarding its transportation, delivery and sale. The general practice of heating milk which has now become a custom among the tenement population of New York is undoubtedly a large factor in the lessened infant mortality during the hot months.

8. Of the methods of feeding now in vogue, that by milk from

central distributing stations unquestionably possesses the most advantages, in that it secures some constant oversight of the child, and since it furnishes the food in such a form that it leaves the mother least to do, it gives her the smallest opportunity of going wrong. This method of feeding is one which deserves to be more extensively employed, and might, in the absence of private philanthropy, wisely be undertaken by municipalities and continued for the four months from May 15th to September 15th.

9. The use by infants of milk delivered in sealed bottles should be encouraged whenever this is possible, and its advantages duly explained. Only the purest milk should be taken raw, especially in summer.

10. Since what is needed most is intelligent care, all possible means should be employed to educate mothers and those caring for infants in proper methods of doing this. This, it is believed, can most effectively be done by the visits of properly qualified trained nurses or women physicians to the homes, supplemented by the use of printed directions.

11. Bad surroundings, though contributing to bad results in feeding, are not the chief factors. It is not therefore, merely by better housing of the poor in large cities that we will see a great reduction in infant mortality.

12. The observations indicate that close percentage modification of milk, though desirable in difficult cases, is not necessary to obtain excellent results with the great majority of infants, and that a certain adjustment of a healthy infant to its food is usually soon secured.

13. While it is true that even in the tenements the results with the best bottle-feeding are nearly as good as average breast-feeding, it is also true that most of the bottle-feeding is at present very badly done, so that as a rule the immense superiority of breast-feeding obtains. This should, therefore, be encouraged by every means, and not discontinued without good and sufficient reasons. The time and money required for artificial feeding, if expended by the tenement mother to secure better food and more rest for herself, would often enable her to continue nursing with advantage to her child.

14. The injurious effects of table food to infants under a year old, and of fruits to all infants and young children in cities in hot weather should be much more generally appreciated.

The First International Congress of School Hygiene (Nuremberg).—R. T. Williamson (*Medical Chronicle*, June) says this Congress met in Nuremberg (Bavaria), April 4th. Cohn (Breslau) wrote upon "What Have Ophthalmic Surgeons Done for School Hygiene and What Remains for Them to Do?" He believes that school work improperly conducted is an important factor in the causation of short-sight or myopia. As a test for vision he employs this letter **E** A letter of this size should be seen with each eye separately at a distance of six metres.

From his examination of 10,000 school children he has drawn the following conclusions:

1. The number of short-sighted children increased the more advanced the school. In village schools the percentage of cases of myopia was 1, in elementary schools 6, in the middle schools 10, in the advanced schools (gymnasias) 26.

2. The number of cases of short-sight increased steadily in all schools from the lowest to the highest class.

3. The average of the degree of myopia increased from class to class. The exact primary cause of myopia is still unknown, but the defect is undoubtedly increased by eye strain, caused through prolonged work near to the eye, by hereditary tendency, and by the deficient lighting of rooms. He thinks that the total window surface in school rooms should be at least one-fifth of the floor area. The higher the windows the better. The scholars should sit so that the light comes from their left side. Cohn advocated the inspection of all schools by special ophthalmic surgeons.

Hueppe (Prague) gave an address on the "Prevention of Infectious Diseases in Schools." Small pox in Germany has practically been stamped out by vaccination. In case of whooping cough and measles greater care should be paid to the closure of the schools and the isolation of affected children. There should not be more than 50 pupils in one class. Mumps and chicken-pox are easily controlled by isolation. In diphtheria and scarlet fever the risk of infection last very long. The disinfection of the school is usually unnecessary if the school-rooms are cleaned every day. Tuberculous disease in the teacher is far more dangerous than in the scholar as regards the risk of infection.

Le Gendre (Paris) spoke of the relation between Scholars and Teachers with Regard to Infectious Diseases and Moral Influence. The schools present favorable conditions for the transmission of tuberculous disease. Impure atmosphere, overstraining of organs of respiration and speech, and fatigue through long hours and insufficient food on account of low salaries increase the susceptibility of teacher to tuberculous disease. In the scholars, miserable homes in large towns and hereditary tendency play an important part in the development of tuberculous diseases. There is risk of infection in close school rooms through dust brought in from street, the common use of articles which may be put into the mouth, as pencils and pens, and through wetting or smearing of books with tuberculous saliva. Diminish the number of scholars in the class room, improve ventilation and avoid appointment of tuberculous teachers. Send tuberculous teachers to suitable sanatoria.

Lieberman (Buda Pest) gave an address on the "Work and Training of the School Doctor." He should give advice in hygiene also with reference to plans of teaching to avoid mental overstrain. Besides his medical training he should have had a special training in hygiene and in the science of education.

Schuschny (Buda Pest) considered Sexual Questions in Re-

lation to School Life. For ten years he had given addresses to youths who were leaving school on sexual hygiene on the dangers of venereal disease and on the advantages of chastity.

Can Bovine Tuberculosis Be Transmitted to Man?—M. K. Allen (*Amer. Pract. and News*, June 1) says that for some years past bovine tuberculosis has increased rapidly in some portions of the world. MacFadyean estimates that 30 per cent. of the cows in Great Britain are tuberculous. A summary of the statistics presented by Russell and Hastings, of the Wisconsin Agricultural Experiment Station of tests for tuberculosis in cattle in the United States, shows this result:

Vermont, 60,000 tested, 3.9 per cent. tubercular. Massachusetts, 24,685, percentage 50. Connecticut, 6,300, percentage 14.2. New York, in 1894, 947, percentage 6.9. New York, in 1897-98, 1,200, percentage 18.4. Pennsylvania, 34,000, percentage 14.1. New Jersey, 2,500, percentage 21.4. Illinois, in 1887-98, 920, percentage 12. Illinois, in 1899, 3,665, percentage 15.32. Michigan, percentage 18. Minnesota, 3,430, percentage 11.1. Iowa, 837, percentage 13.8. Ex. Station tests, suspected herds, 323, percentage 39.6. Ex. Station tests, non-suspected herds, 935, percentage 9. In the year, 1900, under federal inspection, out of 4,841,166 cattle slaughtered but 5,279, or only 0.11 per cent., were found to be sufficiently tuberculous to cause condemnation, thus showing that our beef cattle as they come to the large packing houses are yet comparatively free from tuberculosis.

Statistics show that in the percentage of swine tuberculosis increases as the disease becomes more prevalent in beef and milk-producing animals.

We may often find mixed infection, temperature, formation of pus in various parts of the body of affected animals, particularly in the mammary glands, and in many instances development of toxins. If we have extensive development of tubercular lesions in the udder the secretion of the milk must be affected. Its composition is changed and there are present the tubercle bacillus and associated with it streptococci and staphylococci. This food must be a menace, especially to young children, these toxins producing stomach, diarrheal and other disturbances. Reasoning on this theory is it not perfectly possible that tuberculosis can be transmitted to the human family through the medium of both meat and milk coming from tuberculous animals?

Tuberculin made from human bacilli causes a reaction in cattle affected with bovine tuberculosis. Bovine tuberculosis is communicable to horses, cattle, sheep, swine, dogs, cats, monkeys, guinea pigs, rabbits and other animals, which goes to show a very extensive range of pathogenic power. A number of accidental inoculations of man with bovine tuberculosis in the persons of veterinary surgeons while engaged in autopsies on tuberculous animals have been reported. Grotham reports a case of primary

subcutaneous tuberculosis in a six-year-old girl caused by the topical application of cream for an eruption on the leg. The udder of the cow was found normal. Inguinal and intraperitoneal inoculation of two rabbits with a mixture of milk and cream from this cow gave positive results in both inguinal inoculations and one peritoneal. Caseous material from the girl's leg injected into the peritoneum of a rabbit produced tuberculous peritonitis, causing the death of the rabbit in twenty-one days.

That tuberculosis has been caused by the ingestion of milk from tuberculous cows there can now be no question, as clinical evidences of individual infection by the use of milk and carefully collected statistics showing the frequency of abdominal tuberculosis abundantly establish. Demme reports the death of four infants, the offspring of healthy parents, occurring in the Hospital Jenner from intestinal and mesenteric tuberculosis as the result of drinking unsterilized milk from tuberculous cows. Law quotes a case where a strong, healthy boy of one and one-half years, who drank milk from a cow which was shortly afterwards killed and found to have had a generalized tuberculosis. In three months the child died with abdominal tuberculosis. Gosse, of Geneva, lost a daughter from intestinal tuberculosis. This girl had milk coming from five cows. Four out of these five cows reacted to tuberculin, and upon being slaughtered were found to have tuberculosis, two of which cows showed tubercular disease of the udder. Many other authentic cases might be cited. The British Congress on Tuberculosis not only declined to accept the doctrines promulgated by Koch in this matter, but declared that "medical officers of health should continue to use all power at their disposal, and relax no effort to prevent the spread of tuberculosis by milk and meat."

Chronic Enteritis of the Newborn.—Clinicians have often remarked that in the new-born children whose size and weight are below normal, there exists a chronic disease of the intestine.

Charrin and E. Le Play (*Gaz. Méd. de Paris*, June 4) have attacked the problem. From many experiments made on young animals, injecting certain intestinal poisons, it has been shown that it is possible to modify the development of the subjects and sometimes even to arrest it. It is also known that these poisons exist in the normal intestine. The danger comes from the sickness forming special harmful substances. More often it is that intestinal lesions allow the passage of the poisons contained in the intestinal canal into the circulation without their being retained or modified by the mucus which these lesions have suppressed or altered. In other words, there exist in the intestinal canal compound toxins capable of arresting the development, and these compounds act when the organism is deprived of the defenses which it normally possesses against these products.

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DEC 18 1904

Single Copies, 35 Cents.

THE
AMERICAN
Journal of Obstetrics

AND
DISEASES OF WOMEN AND CHILDREN.

A MONTHLY JOURNAL.

DECEMBER, 1904.



WILLIAM WOOD & COMPANY
51 FIFTH AVENUE
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